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NAVAL POSTGRADUATE SCHOOL

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AN EVALUATION OF THE AWARD FEE DETERMINATION PROCESS IN COST-PLUS-AWARD-FEE CONTRACTS IN MAJOR WEAPON SYSTEMS ACQUISITION

by

Terry Eugene Wight

December 1984

Thesis Advisor: David V. Lamm

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An Evaluation of the Award Fee Determination Process in Cost-Plus-Award-Fee Contracts in Major Weapon Systems Acquisition

by

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ABSTRACT

This thesis evaluates

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I. INTRODUCTION

A. STATEMENT OF THE PROBLEM

This thesis will focus on the evaluation of the award fee determination process in Cost Plus Award Fee (CPAF) contracts. The conceptual framework for CPAF contracts was formed in the late 1950's and early 1960's. The Navy was one of the first Agencies to use CPAF contracts in the early 1960's. Because the award fee determination is subjective, unilateral, and post performance decision on the part of the Government, the amount of the award fee and the process by which the award fee is determined is subject to criticism from internal Navy sources, Congress and industry. An attempt will be made to evaluate the award fee determination process to explore how it might be improved in order to ensure the Government pays a "fair and reasonable" price.

B. OBJECTIVES AND RESEARCH QUESTIONS

The objective of this research effort is to study and evaluate the award fee determination process in major weapon systems acquisition in an attempt to improve the process.

The research questions which, if answered, would achieve the objective are as follows:

1. Primary question:

   What are the key characteristics of the award fee determination process under CPAF contracts for major weapon systems and how might this process be improved?

2. Subsidiary questions:

   a) What are the basic concepts and assumptions in the award fee determination process?

   b) What are the key criteria used to evaluate contractor performance and how have these criteria been utilized?

   c) What are the significant issues and problems in contractor performance evaluation?

   d) What guidelines are used by the Fee Determination Official in determining the quality of contractor's performance and amount of award fee?

   e) What input does the contractor have in the award fee determination process?

   f) What modifications should be made to improve the fee determination process?

   g) How are funds utilized which remain in the "award fee pool" after the award fee determination decision is made?

h) The amount of the award fee is limited by the size of the award fee pool. In measuring the award fee as a percentage of the award fee pool, what trends, if any, are evident?

C. SCOPE

This thesis will evaluate the award fee determination process and award fee concept as used with CPAF contracts in major weapon systems acquisition within the Department of the Navy. While many topics could be discussed concerning CPAF contracts, this thesis will focus only on the award fee determination process in structuring the award fee in the CPAF contract and in the proper administration of the contract. This process will be examined in detail in an attempt to make recommendations for improving the process.

D. STUDY LIMITATIONS AND ASSUMPTIONS

The research will be limited by the accessability of data available from the academic environment, Naval Material Command, Naval Air Systems Command, Naval Sea Systems Command, and the willingness of private contractors to cooperate.

The following assumptions have been made in the research process:

1. That the original decision to use a CPAF contract was proper and that the contract type for the the particular situation used is not to be addressed.
2. That the contracts selected for examination are representative of the total CPAF contract population.
3. That the findings and recommendations are appropriate for other Agencies to consider and are not strictly Navy oriented.

E. METHODOLOGY

The literature concerning the development and use of award fee contracts, specifically CPAF contracts, is examined in this thesis. Sources for this literature were General Accounting Office audit reports, Defense Logistics Studies Information Exchange, Air Force Business Research Management Center, Naval Postgraduate School library, and the Administrative Sciences Department library.

Interviews were conducted and data obtained from personnel in the following positions and for the following purposes:

1. Fee Determination Officials to examine the decision making process used to determine the amount of the award fee, management of the award fee pool, review inputs received from Performance Evaluation Board

members, and gain insight into the degree of acceptance of the award fee contract.

2. Members of Performance Evaluation Boards to examine their level of acceptance and assumptions inherent in the award fee process.

3. Contract policy staff members at the Assistant Secretary of the Navy and Naval Material Command to evaluate major factors, characteristics, and basic concepts of the award fee process.

4. Contractor representatives to gain insight into contractor's views toward the award fee process.

Data from eighteen CPAF contracts representing four different Project Offices was obtained for review and analysis. The approximate total cost estimate for these eighteen contracts exceeded $2.271 billion. These data were provided to the researcher by evaluation period, and included the amount of funds available in the award fee pool to be awarded during the evaluation period and the amount actually awarded. Included in the eighteen contracts were 117 individual evaluation periods from which trend analysis will be conducted.

F. ORGANIZATION

The first half of this research effort is designed around what is available in the literature. Chapter II presents some historical background of CPAF contracts; the conceptual framework as seen in the literature covering the elements of an award fee contract, the evaluation criteria, and the award procedures; followed by the applications and advantages as well as disadvantages of CPAF contracts. Chapter III is designed to give the reader some background on using profit as a motivational tool. If award fee contracts are intended to motivate the contractor, then it behooves Contracting Officers and others interfacing with the contractor to understand the driving forces which motivate the contractor.

The second half of the thesis resulted from conducting interviews and gathering data from the various individuals contacted. Chapter IV addresses the concerns and elements used when structuring a CPAF contract. These are pre-award concerns which the Project Manager and Contracting Officer would want to address in formulating the contract and submission for a pre-business clearance. Such elements as the base fee, award fee pool, evaluation criteria, evaluation period length, and fee computation formulas are discussed. Chapter V addresses the issues and concerns involved with administering CPAF contracts. Items of interest include the Performance Evaluation Board composition and proceedings, as well as the role and authority of the Fee Determination Official. Chapter V concludes with an examination of trend analysis of award fees from data gathered during the course of research interviews.

Chapter VI is designed to summarize the research by reaching conclusions, making research recommendations, responding to the research questions, and making recommendations for further study.

II. BACKGROUND AND CONCEPTUAL FRAMEWORK

A. INTRODUCTION

The Cost-Plus-Award-Fee (CPAF) contract is a member of the family of cost-reimbursable contracts with special fee provisions. CPAF contracts are characterized by the unique method in which the amount of the contractor's fee is determined. Generally, an award fee is an incentive that can be paid by the Government to a contractor. The objective of the award fee provision clause in a contract is to encourage the contractor to surpass the minimum acceptable performance standards established for certain areas that are described by what is referred to as the "evaluation criteria." A CPAF contract provides a means of applying an incentive to contracts which are not susceptible to a finite measurement of performance necessary for structuring most incentive contracts, and as such, require a subjective evaluation. The fee established in a CPAF contract consists of two parts. The first part is a base (or fixed) fee. Award fee guidelines allow the contractor to receive a base fee which does not vary with contract performance. The size of the base fee will be discussed later in this chapter. An award fee contract also provides for a maximum fee. The difference between the maximum fee and base fee is referred to as the "award fee pool." The amount of the pool awarded to the contractor is contingent upon the level of contractor performance during a pre-specified performance period, usually three to six months. This award amount is intended to provide motivation for the contractor to excel in various areas of contract performance such as quality, timeliness, ingenuity, and cost effectiveness. The amount of award fee awarded to the contractor may be all that is available in the award fee pool or only a part of that which is available. The exact amount is based upon a subjective evaluation of the quality of the contractor's performance, judged on the basis of criteria originally included in the contract. The award fee is determined by the Government representatives in a unilateral decision, which is not subject to the Disputes Clause of the contract [Ref. 1].

The purpose of this chapter is to introduce this relatively new type of contract by reviewing the historical background, the conceptual framework necessary for structuring a CPAF contract, situations/conditions under which CPAF contracts are appropriate for use, and advantages and disadvantages of CPAF contracts.

B. HISTORICAL BACKGROUND

Variants of award fee provisions were first implemented in Federal Government aircraft maintenance and overhaul contracts during the late 1950's [Ref. 2]. During the period 1958 through 1961, Professor Frederic M. Scherer, of Harvard University, participated as a faculty team member in the Weapons Acquisition Research Project which was commissioned by the Ford Foundation to explore the relationship between industry and the Government in weapon systems acquisition. Professor Scherer was the first to publish recommendations for the use of "After the Fact Evaluation in Profit Determination" in 1962. It was his belief that award fee provisions would be particularly useful in the research and development (R & D) phases of major systems acquisition programs where determining costs, product quality, and schedules in advance of performance was difficult [Ref. 3]. As such, in this researcher's opinion, Professor Scherer may well be considered the "father of CPAF contracting."

In addition to Professor Scherers' work, several other independent planning actions were considering the use of award fee contracts during 1961 and 1962. Both the Navy and National Aeronautics and Space Administration (NASA) were negotiating award fee contracts in 1962 [Ref. 66]. NASA is actually credited with being the pioneer in CPAF contracting. The Navy's logistic support contract for operations at Kwajalein Island, effective in July 1962, combined a cost-plus-incentive-fee (CPIF) arrangement for cost control with an award fee provision for a subjective evaluation of staffing control, personnel turnover, and quality of performance [Ref. 5]. On 1 March 1964, the U.S. Navy Purchasing Office, Los Angeles, awarded the Navy's first "pure" CPAF contract for operation and maintenance of instrumentation systems and test range facilities [Ref. 6].

In addition to the Navy, NASA also played an active role in the development of CPAF contracts. The Goddard Space Flight Center first negotiated a CPAF contract covering operation, maintenance, and engineering services for the Mercury Manned Space Flight Network. Although this was the first CPAF contract negotiated, it did not become effective until 1 January 1963. NASA's first CPAF contract to actually be awarded was dated 1 October 1962. This contract was negotiated by the Space Nuclear Propulsion Office, Cleveland, Ohio, and covered research and development efforts for a Nuclear Powered Rocket Engine (NERVA) [Ref. 7].

The Armed Services Procurement Regulation Committee originally approved the use of CPAF contracts for experimental purposes within the Department of Defense (DOD) in 1963 [Ref. 8]. It is not clear to the researcher how the

Navy was able to award a contract for the support of Kwajalein Island with award fee provisions in 1962; it may have been an individual Armed Services Procurement Regulation (ASPR) authorized deviation with the ASPR committee later deciding to allow a class deviation for everyone on an experimental basis, however support for this theory could not be found. At first, use of CPAF contracts were thought to be viable only in level-of-effort type contracts; with the first five applications of CPAF contracts under the test used for procurement of technical, engineering, and support services [Ref. 9]. The Navy expanded use of CPAF contracts within two and one-half years following the test approval to include the procurement of research and development, naval architectural design, and construction [Ref. 10]. The researcher believes that this expansion by the Navy of CPAF contract use into the area of research and development may be directly attributable to Professor Scherer's earlier work in this area.

During the first four years of experience with award fee provisions, a total of 140 DOD and NASA contracts, valued in excess of $1.1 billion, were awarded to nearly 90 civilian contractors [Ref. 11]. While NASA and all DOD Agencies (Departments of the Army, Air Force and Navy) used CPAF contracts in the early years, the Navy and NASA appeared to be the pioneers and made the most extensive use of this contract type.

The CPAF contract is gaining acceptance within both the Government and industry. During Fiscal Year (FY) 1982, CPAF contracts were used in one-half of one percent of all DOD contracts in excess of $10,000, which also represents 3.5 percent of net dollar value of FY 1982 contracts. Additionally, in FY 1982, CPAF contracts represented 7.4 percent of the net dollar value of all Navy contracts. CPAF contracts as a percentage of total numbers of contracts in excess of $10,000 used by the Navy was 1.5 percent in FY1982 [Ref. 12]. The differences between the percentages indicates that the award fee contracts represented a larger dollar value than the average contract.

According to the DOD and NASA Incentive Contracting Guide, "the objective of an incentive contract is to motivate the contractor to earn more compensation by achieving better performance and controlling costs" [Ref. 13]. The NASA Cost Plus Award Fee Contracting Guide indicates that experience has shown that CPAF contracts have generated tangible beneficial and motivational responses, both from Government and industry. Communications, in particular, have become more effective between the Government and the contractor. In addition, the CPAF concept has demanded and has resulted in improved definition of tasks (Statement of Work); both Government and industry have used CPAF procedures as management tools to communicate to supervisory, administrative, and operating levels [Ref. 14].

Since its conception in the late 1950's and early 1960's, use of the CPAF concept has grown to represent a powerful management tool. The researcher believes that the increase in use of CPAF contracts, to 3.5 percent of the net DOD dollar value for FY 1982 contracts, indicates that industry has begun to accept the subjective evaluation process inherent in the concept.

C. CONCEPTUAL FRAMEWORK

Now that we have examined historical development, how is a CPAF contract structured?

1. Elements of an Award Fee Contract

In its simplest form, a CPAF contract will contain the following elements: estimated cost, base fee, maximum fee, award periods, and evaluation criteria.

Estimated costs should be negotiated on a fair and equitable basis between the Government and contractor, and should represent the best estimate of what actual costs will be upon completion of performance. Estimated costs are analogous to target costs in a CPIF contract.

The base fee is the minimum dollar amount of fee that a contractor can earn on a CPAF contract and may in fact be zero. The base fee is designed to provide the contractor with an adequate fee for performing to the minimum standards. As such, the base fee is synonymous with the minimum fee on a CPIF contract. However, the DOD Supplement to the Federal Acquisition Regulations (FAR) limits the amount of the base fee to three percent of estimated costs [Ref. 26].

As mentioned earlier, the difference between the base fee and maximum fee is called the award fee pool and is that amount available for award to the contractor on the basis of the results of periodic evaluations. The award fee pool should be allocated to the evaluation periods in proportion to the level of effort expected to be required during each period.

The maximum fee can be described as the base fee plus the amount in the award fee pool. The controlling requirement limiting the size of the maximum fee is the regulatory limitation that this fee will not exceed the statutory limitation on cost reimbursement contracts; namely, 15 percent of target (estimated) costs for research and development efforts, six percent for architectural or engineering services related to public works functions, and 10 percent for all other types of contracts [Ref. 27]. This means that if the minimum fee is established at three percent (the maximum allowed), then the award fee amount is limited to 12 percent of estimated costs for research and development efforts, three percent for architectural or engineering services, and seven percent for all other types of contracts.

The award periods must be long enough to cover sufficient work to enable a reasonable base upon which to develop the evaluation, but short enough to allow feedback to the contractor during performance. An evaluation period of three months may be too short to justify in that the increased administrative effort necessary to make the evaluations becomes too much of an administrative burden. An evaluation period of a four or six month length may be more appropriate.

2. Establishing the Evaluation Criteria

The evaluation criteria and standards for making the award are the basis for the ultimate award. The evaluation criteria set forth the elements of the contractor's performance which will be used by the Government in determining the award amount. The greatest challenge with a CPAF contract lies in the quality of the evaluation criteria structure and the rating plan. The importance of a well-defined, well-written evaluation plan cannot be over-emphasized. The evaluation criteria should identify the weighting of various factors and include guidance as to the level of performance required for specific rating levels. The DOD Supplement to the FAR requires that the evaluation criteria be included in the contract [Ref. 28].

While the evaluation criteria must be fully understood by the contractor, the selection of criteria is not a subject of negotiation in some agencies. The final selection is a unilateral decision by some Government Agency negotiators [Ref. 29]. The advantage of the unilateral issuance of evaluation criteria is that they can be changed by the Government during contract performance if it becomes necessary, in the Government's opinion, to redirect the contractor's emphasis.

In general, the evaluation criteria should be fair and reasonable measures of performance in key areas. They should also be flexible to enable adaptation to a changing environment while continuing to motivate the contractor to improve performance.

Performance criteria in award fee contracts must be, by definition, subjective. To properly choose appropriate performance criteria, it is necessary to command a thorough knowledge of both managerial as well as technical areas of the project.

No two evaluation and rating plans will be identical in all respects; each must be tailored to the specific needs and requirements. In addition, evaluation criteria should be tailored to a limited number of key elements which are critical to the project's success. Examples of key elements might include technical, quality, managerial, schedule, cost control, and personnel utilization. Once the key elements are decided upon, these categories may be further divided into criteria for evaluating the elements that make up each performance category. The inclusion of sub-elements is also a feasible alternative. Appendix B contains the example of award criteria provided in DOD Supplement to the FAR, section 16.404-2.

Because the Government is more interested in results rather than effort, evaluation criteria should be geared to evaluating "output" rather than "input" [Ref. 30]. As such, the criteria selected must represent attainable goals; otherwise the motivation to the contractor may be lost.

There are many methods for establishing rating plans and evaluation criteria. As mentioned earlier, no two systems will be identical; a system must be selected which best fits the requirement. The system of standards most commonly used is the adjective-type standard rating system which indexes a performance quality adjective and corresponding explanation to a percentage of the potential award fee available during the evaluation period [Ref. 31]. While Appendix B shows one example recommended by the DOD Supplement to the FAR, the following is an example of an adjective evaluation standards system recommended by NASA: [Ref. 32]

1. Excellent: Represents 91 to 100 percent of the potential award fee. Performance is outstanding in most respects, approaching the best that could be performed by a qualified contractor. Contractor has greatly exceeded quality, schedule, output and overall performance which would be expected of an average contractor. Areas of deficiency are very few and relatively unimportant in nature. Contractor shows initiative in executing job and invoking improvements.

2. Good: Represents 81 to 90 percent of the potential award fee. Performance is substantially better than standards. Contractor has more than met all needs, has substantially improved upon quality and schedules, has exceeded the performance expected of an average contractor. Areas of deficiency are relatively few and are more than offset by areas of above average or excellent performance.

3. Satisfactory: Represents 71 to 80 percent of the potential award fee. Performance is adequate, overall. Contractor has met all needs, schedule, and expectations in a fashion which corresponds to standard performance by a qualified contractor. Areas of deficiency are about offset by areas of above standard performance.

4. Marginal: Represents 61 to 70 percent of the potential award fee. Performance is below the standard performance expected of a qualified contractor. Contractor is deficient in a significant number of areas. Performance in other areas is generally average, with few or no areas of above average performance.

5. Unsatisfactory: Represents 60 percent or below the potential award fee. Performance is deficient in substantial areas of effort. Immediate improvement is required in order to permit continuation of the contract. Termination may be considered.

D. THE AWARD PROCEDURE

The award procedure is a three step process within the contracting agency which begins with Government monitors evaluating contractor performance during the reporting period. Generally, the people used for this task are the technical and business personnel who are monitoring the contractor's work on a regular basis. These people may include the Administrative Contracting Officer (ACO), Defense Contract Audit Agency (DCAA) auditor, and other on-site representatives. These people should be knowledgeable of the contract requirements, the evaluation criteria, and technical areas. The goal of this part of the process is to obtain the evaluation of the most knowledgeable personnel in the agency on each area of the contractor's performance. Findings of these individuals should be consolidated into periodic reports and forwarded to an award fee Performance Evaluation Board (PEB). The frequency of these reports will depend on the length of the evaluation period, but, in the author's opinion, should be either monthly or quarterly.

Step two in this process is a review of these evaluations by the PEB. The DOD Supplement to the FAR indicates that this step is optional [Ref. 33]. As such, consideration should be given to eliminating this step on smaller, less complex, procurements. If the PEB were utilized, its function would be to review all evaluation reports and subjectively determine a performance grade for each pre-established evaluation criterion and an overall performance grade for the period. The DOD Supplement to the FAR has a recommended format for a contractor performance evaluation report which is included in Appendix C for review [Ref. 34].

The third step is the actual award by the Award-fee Determination Official (ADO). This individual is also often referred to as the Fee Determination Official (FDO). If the PEB is utilized, the PEB will forward the performance grade and recommended award fee amount to the ADO. There are no requirements which indicate that the recommended award fee amount is binding on the ADO. The ADO must either accept the PEB's recommendation, or determine a different award fee amount. If a PEB is not utilized, the ADO must review the evaluation reports and determine an award fee amount. In major contracts, the ADO would be at the management level of the procuring activity (usually the Project Manager), while in smaller contracts, the contracting officer himself might perform this function. Once the ADO makes the initial award fee determination, a letter report is forwarded to the contractor providing information on the performance grade and corresponding award fee, and a listing of all areas of performance improvement which, if incorporated, may result in potential additional award fees in future periods [Ref. 35]. The contractor has an opportunity to rebut the ADO's decision by presenting evidence in his favor [Ref. 36]. However, once the ADO (and possibly in consultation with the PEB) has reviewed the rebuttal and final award fee determination made by the ADO, the decision is final and not subject to dispute [Ref. 37].

E. APPLICATION OF COST-PLUS-AWARD-FEE CONTRACTS

The Federal Acquisition Regulation (FAR) and Department of Defense Supplement to the FAR state that CPAF contracts are suitable when: [Ref. 15 and 16]

> (i) The work to be performed is such that it is neither feasible nor effective to devise predetermined objective incentive targets applicable to cost, technical performance or schedule;
>
> (ii) The likelihood of meeting acquisition objectives will be enhanced by using a contract that effectively motivates the contractor toward exceptional performance and provides the Government with the flexibility to evaluate both actual performance and the conditions under which it was achieved;
>
> (iii) Any additional administrative effort and cost required to monitor and evaluate performance are justified by the expected benefits;
>
> (iv) Level of effort contracts for performance of services where mission feasibility is established but measurement of achievement must be by subjective evaluation rather than objective measurement; and
>
> (v) Work which would have been placed under another type of contract if the performance objectives could be

expressed in advance by definite milestones, targets or goals susceptible of measuring actual performance.

The FAR does not place a minimum limit on the dollar size of CPAF contracts. NASA uses a rule of thumb that: [Ref. 18]

> Contracts for less than $100,000 may be placed on a CPAF basis if the contractor is providing critical support services or when the significance of contemplated performance gains may far outweigh the additional administrative expense.

Although a minimum limit on the dollar size of CPAF contracts is not imposed by DOD, the Chief of Naval Material (NAVMAT) does indicate that "award fee contracts should not generally be employed for contracts valued under $25 million" [Ref. 17]. Additionally, the FAR and DOD Supplement to the FAR place the following limitations on their use:

> (i) All of the limitations in 16.301-3 are complied with[1]

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[1]A cost-reimbursement contract may be used when: (a) The contractor's accounting system is adequate for determining costs applicable to the contract; (b) Appropriate Government surveillance during performance will provide reasonable assurance that efficient methods and effective cost controls are used; and (c) A determination and findings

(ii) The maximum fee payable (i.e., the base fee plus the highest potential award fee) complies with the limitations in 15.903-d[2]

(iii) The contract amount, performance period, and expected benefits are sufficient to warrant the additional administrative effort and costs involved; [Ref. 19]

(iv) The CPAF contract shall not be used as an administrative technique to avoid CPFF contracts when the criteria for CPFF contracts apply, nor shall a CPAF contract be used to avoid the effort of establishing objective targets so as to make feasible the use of a CPIF type contract;

(v) The CPAF contract shall not be used where the contract amount, period of performance or the benefits expected are insufficient to warrant the additional administrative effort or cost; and

(vi) The CPAF contract shall not be used for procurements categorized as either Engineering Development or Operational System Development which have undergone contract definition, except that where it may be more advantageous to do so, it may be used in these categories for individual procurements, ancillary to the development of a major weapon system or equipment, where the purpose of the procurement is clearly to determine or solve specific problems associated with the major weapon system or equipment. [Ref. 20]

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has been executed, in accordance with agency procedures showing that (1) this contract type is likely to be less costly than any other type, or (2) it is impractical to obtain supplies or services of the kind or quality required without the use of this contract type.

[2]To be discussed later in this chapter.

It is important to note that if the cost of administration of a CPAF contract is in excess of any benefits which may accrue to the Government, a contract form other than CPAF should be utilized. The problem then becomes one of how to measure the benefits and costs of administration; which is beyond the scope of this thesis. In addition, award fee provisions should not be used when another contract type would be more appropriate, such as when evaluation criteria can be objectively measured. Such an example would be a CPIF contract with multiple incentives.

It has been demonstrated that CPAF contracts are particularly appropriate for use in the procurement of support services generally associated with base maintenance and operations and mission support contracts. For example, the researcher believes that it may be a viable option to use CPAF provisions in the contracting out of base medical support services under Office of Management and Budget (OMB) Circular A-76. Another example would be the operation and maintenance of the computer center at the Naval Postgraduate School.

As will be seen in Chapter IV, the Navy has expanded the use of CPAF contracts into the acquisition of major weapon systems. The development phase of major weapon systems acquisition appears to be well-suited for CPAF use. This would also represent the largest dollar applications of CPAF use.

Although award fee provisions are most commonly used in CPAF contracts, use of the award fee concept is not limited strictly to one contract type. Section 16.404-2(c) of the DOD Supplement to the FAR provides some flexibility in the use of this concept. There may be times when the contracting officer desires to provide some form of motivation to the contractor which is both objective and subjective. For example, logistic support, quality, timeliness, cooperation, ingenuity, and cost effectiveness are areas under management control which may be evaluated only subjectively. A contract in which the majority of the fee (profit) is subject to a Fixed Price Incentive (FPI) arrangement and a minority is subject to an award fee arrangement, would be termed a FPI/AF contract. A CPIF/AF contract would be where the majority of the fee was subject to a cost plus incentive arrangement with a minority subject to an award fee arrangement.

F. ADVANTAGES AND DISADVANTAGES OF COST-PLUS-AWARD-FEE CONTRACTS

1. Advantages

The advantages of CPAF contracts are numerous and varied. One advantage, identified by several interviewees, is as a motivational management tool for both Government and industry resulting in improved horizontal and vertical communication (i.e., between Government and industry as well as up and down all levels of the corporate structure). One Program Manager indicated that as a management tool, the Government is more effectively able to influence the contractor and project progress during the contract period. Excellence by the contractor is rewarded with higher award fees. Similarly, poor or substandard performance results in lower award fees. Additionally, one Business/Financial Manager pointed out that depending upon how the contract is structured, the evaluation period may be of a short enough duration that the contractor can receive "nearly instantaneous" feedback on his performance. The more timely the feedback, the better it is for the contractor because it allows timely adjustments by the contractor. This cause-and-effect relationship between performance and profit can result in the contractor making modifications to his procedures to become more efficient, and hence earn higher award fees during subsequent evaluation periods.

Even without profit as a motivator, the evaluation itself can be a positive motivational tool. The award fee evaluation can enhance the pride of the organization through the managers and other employees [Ref. 21]. Just as individuals have basic and higher order needs that must be satisfied (i.e., food, shelter, security, self esteem), so too do corporations have needs. Once the firm's lower level needs are satisfied (i.e., survival, profit, growth, market share), prestige becomes the primary motive. The award fee acts as a corporate motivator to the extent that it is perceived by the firm to affect its prestige.

The award fee concept also allows for management flexibility, as pointed out by one Business/Financial Manager. This flexibility can take several forms. Because the amount of award fee determination is a subjective evaluation, with performance being measured with predetermined standards which keep changing, management can remain flexible to take into consideration unexpected/unplanned circumstances while still allowing the contractor to earn up to the maximum amount of the award fee, if appropriate. A second form of flexibility in award fee contracts is the Government's right to change the evaluation criteria in an effort to redirect the contractor's emphasis. Still another technique which provides flexibility to management is the Government's ability to divide and assign the award fee to various periods depending upon the milestones the Government wishes to emphasize. The amount available in the award fee pool need not be evenly divided among every evaluation period. Likewise, depending upon how the contract is structured, any award fee available in the pool which is not awarded during a particular evaluation period, may be either carried forward to subsequent periods to provide for additional contractor motivation, or lost by the contractor and removed from the pool.[3] The Government also has the flexibility to determine the length of the evaluation periods. However, care must be taken in making this determination. Evaluation periods which are too short will place an unnecessary administrative burden on the contract administrators and other personnel. On the other hand, in the researcher's opinion, an evaluation period which is too long reduces the motivational aspects discussed earlier when the contractor does not receive timely feedback.

NASA discovered that improved performance is not limited to areas motivated in the award fee plan, but at times extends t improvements on other Government contracts currently in existence within the corporation [Ref. 22]. Called the "overflow" principle, NASA indicated that, "Once a contractor begins making decisions in consonance with the guidelines of the contract, the results of related nonincentivized contracts also improve" [Ref. 22].

Still another advantage, in the researcher's opinion, is that use of a CPAF contract forces the preparation of a well-defined Statement of Work (SOW). The

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[3]The Navy recently restricted use of the carry forward feature in NAVMAT Instruction 4280.14of 10 July 1984. This will be further examined in Chapter IV when discussing use of the award fee pool.

contractor, realizing that his award fee depends upon satisfying the desired emphasis to be placed on specific performance areas, benefits from more explicit direction than he would have received under a Cost-Plus-Fixed-Fee (CPFF) contract. In developing the SOW, the contractor seeks higher fees through better performance and the Government is looking for the best possible standards against which to make the required evaluations.

Still another advantage, for the contractor, is that a CPAF contract provides the ability to earn higher fees. While most CPFF service contracts earn a 7 or 8 percent fee, a well structured CPAF contract can provide fees from 10 to 12 percent for superior performance [Ref. 23]. As indicated by a number of interviewees, this has led some people to refer to CPAF contracting as a "give away" program.

One last advantage is that CPAF contracts can be used by contractor management as a motivational tool for the corporate employees [Ref. 24]. Dr. Arthur C. Meiners advocates development of a system which would allow employees working to support a CPAF contract to participate directly in the award fee process with bonus payments. As the amount of the award fee increases, so would the financial rewards to the various employees. Such a contract would be called Cost-Plus-Award-Fee, Employee Participation, CPAF(EP).

2. Disadvantages

Disadvantages for the use of CPAF contracts do exist. Perhaps the one major disadvantage, as identified by one Cost Analyst, is the extensive Government organization necessary to properly administer the contract. Contractor performance must be monitored closely by technically qualified personnel who are knowledgeable of the requirement for fairness and impartiality, the intent of the incentives, and how evaluations will be used. They must also have the time, motivation and guidance to prepare evaluations which are meaningful to both the Government and the contractor. Evaluators must understand that their function is to evaluate the contractor, not become a participatory member of the contractor's management team. They must also be knowledgeable of the technical performance required by the contract. If the Government does not have the necessary resources available for commitment to properly administer a CPAF contract, some other contract type should be utilized.

This disadvantage highlights a need which is not currently being satisfied. Numerous personnel interviewed for this research pointed out that a formalized training program for CPAF contracts does not exist. This is particularly critical with CPAF contracts because of their unique features. Personnel working with award fee contracts must be trained in terms of contractor motivation factors, evaluation criteria and methods, contract administration techniques, potential for abuse and misuse, responsibilities of those who monitor contractor performance and provide inputs and testimony to the PEB, as well as other factors unique to CPAF contracts. Structuring such a training program and manual is beyond the scope of this thesis.

Timely evaluation is also a critical factor as indicated by a number of interviewees. The Government must conduct the evaluation, determine the amount of fee to be awarded, and notify the contractor of the results in a timely manner. Delays in this process will result in the contractor losing motivation for increasing efficiency.

As will be discussed later, an award fee contract does not have a target fee as one of its elements. Because of this, the Government must fully fund the amount of the maximum award fee. Failure to do so will signal to the contractor that the full amount of the award fee is impossible to attain [Ref. 25]. In an environment of tight budgets, it is unrealistic to expect that a Program Manager would, or could, request additional funding in order to reward the contractor. Failure to fully fund the maximum award fee will also send a signal to the evaluators that the reduced figure is what the Government really had in mind as the maximum from the beginning. In addition, it just makes for sound business management to fully fund the project.

G. CONCLUSION

Use of the award fee concept is continuing to grow since its conception in the late 1950's and initial utilization in the early 1960's. The CPAF contract can be an effective incentive technique when understood and properly applied. However, because the evaluation process is subjective and the determination of award fee amount a unilateral decision, success of the award fee concept depends on the Government's ability to maintain the credibility and integrity of the evaluation process. In addition, the award fee concept demands the active support of both the Government and contractor personnel to properly administer the contract and manage the unique administrative requirements. Lack of complete management support and the failure to maintain the credibility and integrity of the evaluation process, quickly reduces the effectiveness of the award fee contract.

An unbiased, fair, and reasonable measure of performance is also critical to the success of the CPAF concept. The contractor must be properly motivated to strive for more efficient and better performance in an effort to receive a higher award fee. The unilateral selection of evaluation criteria by some Government Agencies is of concern to the researcher. In order to be "fair and reasonable" to both the Government and to the contractor, the contractor should have an input into the development of evaluation criteria.

In an attempt to better understand how award fees can be used as an incentive (or motivating) tool, it is first necessary to recognize those factors with which the contractor can in fact be motivated. In the researcher's opinion, the DOD profit policy assumes that profit (or award fee) alone is enough to motivate the contractor. Is this really the case? Are there not other factors which can act to motivate the contractor? These questions will be examined in Chapter III.

III. PROFIT AS A MOTIVATIONAL TOOL

A. INTRODUCTION

The below paragraphs represent the Government's profit policy as it currently exists in the Federal Acquisition Regulation (FAR):

> It is in the Government's interest to offer contractors opportunities for financial rewards sufficient to (1) stimulate efficient contract performance, (2) attract the best capabilities of qualified large and small business concerns to Government contracts, and (3) maintain a viable industrial base.
>
> Both the Government and contractors should be concerned with profit as a motivator of efficient and effective contract performance. Negotiations aimed merely at reducing prices by reducing profit, without proper recognition of the function of profit, are not in the Government's interests. Negotiation of extremely low profits, use of historical averages, or automatic application of predetermined percentages of total estimated costs do not provide proper motivation for optimum contract performance. With the exception of statutory ceilings on profit and fee, agencies shall not (1) establish administrative ceilings or (2) create administrative procedures that could be represented to contractors as de facto ceilings [Ref. 38].

This policy statement is supplemented with a Department of Defense (DOD) statement as indicated below:

> Furthermore, low average profit rates on defense contracts overall are detrimental to the public interest. Effective national defense in a free enterprise economy requires that the best industrial capabilities be attracted to defense contracts. These capabilities will be driven away from the defense market if defense contracts are characterized by low profit opportunities. Consequently, negotiations aimed merely at reducing prices by reducing profits, with no realization of the function of profit, cannot be condoned. For each contract in which profit is negotiated as a separate element of the contract price, the aim of negotiation should be to employ the profit motive so as to impel effective contract performance by which overall costs are economically controlled. To this end, the profit objective must be fitted to the circumstances of the particular acquisition, giving due weight to each of the effort, risk, facilities investment, and special factors set forth (in weighted guidelines). This will result in a wider range of profits which, in many cases, will be significantly higher than previous norms [Ref. 39].

The above policy statements indicate that it is the Government's belief that profit is the basic motivating force behind the contractor. There is an implied assumption on the part of the Government that the contractor will be properly motivated if given the opportunity to increase his profits. The contractor, by accepting the contract, appears to be agreeing with the Government.

Brigadier General Bernard L. Weiss, USAF, recently indicated that large corporate DOD contractors should be treated as "public utilities" and implied that these corporate giants have a monopoly over the supply of their unique defense product while the consumer (DOD) has little if any power over the contractor to refuse the product at the contractor's price once Congress has authorized the program and appropriated funds. [Ref. 40]. Furthermore, General Weiss indicated that corporate profit goals are to attain adequate levels, not adequate rates.

Herein lies the dilemma. Are contractors strictly motivated by the "profit motive" as the Government's profit policy implies, or are the contractors motivated by some other forces? Clearly, it is the belief of Government and DOD policy makers that profit maximization is the prime industry motivater for improved performance. Additionally, it is clear that it is DOD's intention to use profits to motivate contractor performance. The purpose of this chapter is to explore the profit motive and examine those forces which act to motivate and influence contractor's performance.

To gain a better understanding of the present profit policy, it would be helpful to briefly examine the historical development of this policy.

B. HISTORICAL PERSPECTIVE

Historically, purchasing by the Government has been on the basis of price competition and, as such, negated any need for a profit policy. It was felt that the competition in the market place among independent contractors would result in the Government receiving a fair and reasonable price [Ref. 41].

Cost-plus-percentage-of-cost (CPPC) contracts were used regularly during the 1930's. A general lack of competition resulted in an increase in the number of contracts negotiated on either expected or actual costs [Ref. 42]. In a CPPC contract, the profit or fee is determined by applying a fixed percentage to the costs incurred. Therefore, as costs increased, so did profits. If costs decreased, profits also fell. The contractor was therefore motivated to actually increase his costs! Responding to public pressure, Congress passed numerous legislative actions designed to control abuses such as CPPC contracts. For example, the Vinson-Trammell Act of 1934 limited profits to ten percent on Navy ships and aircraft and required audits and inspections of contractor records [Ref. 43].

The potential for contractor fraud, waste and abuse surfaced again during World War II with a shortage of supplier capacity, resulting in the Renegotiation Act of

1942. This Act called for the renegotiation of both prime and subcontracts in excess of $100,000 and made possible the recovery of excessive profits along with unallowable costs. The Renegotiation Board also established profit as a percentage of sales on individual contracts as the measure of profitability.

1. Initial Policy Statement

The first formalized policy statement addressing profit appears to have been included in the Armed Services Procurement Act of 1947 which states that for negotiated contracts:

> The fee for performing a cost-plus-a-fixed-fee contract for experimental, developmental, or research work may not be more than 15% of the estimated cost of the contract, not including the fee. The fee for performing a cost-plus-a-fixed-fee contract for architectural or engineering services for a public work or utility plus the cost of these services to the contractor may not be more than 6% of the estimated cost of that work or project, not including the fee. The fee for performing any other cost-plus-a-fixed-fee contract may not be more than 10% of the estimated cost of the contract, not including the fee [Ref. 44].

There were no statutory limits placed on profits under fixed price contracts, except on those which may have been considered as "excessive" by the Renegotiation Act.

A more general profit policy statement also appeared in the Armed Services Procurement Regulation (ASPR) in 1947 as:

> The Department of Defense must apply contracting policies and methods designed to create an environment in which industry can realize profits on defense business which are high enough to give reasonable assurance of long term availability to DOD industrial support by the best companies and to enable those defense contractors to attract sufficient equity and borrowed capital [Ref. 45].

During the 1950's, the profit policy outlined in ASPR developed into a narrative form which lacked specific guidance on the relationship between profit elements to be considered when arriving at the appropriate profit level for negotiated contracts. Nine profit elements were identified as:

1. Effective competition;
2. Degree of risk;
3. Nature of work to be performed;
4. Extent of Government assistance;
5. Extent of contractor's investments;
6. Character of contractor's business;
7. Contractor performance;
8. Subcontracting; and
9. Unrealistic estimates [Ref. 46].

The varied nature of these nine profit elements and amount of subjectivity inherent in evaluating each element without specific guidelines made the contracting personnel's task more difficult than was necessary. The predominant factor was the "historical rate" established on previous contracts. Contracting officers used the above nine profit elements only to adjust profit rates to fit specific procurement situations [Ref. 47].

Inadequacies in a formalized profit policy continued and became visible in the early 1960's. The Senate Committee on Government Operations (also known as the McClellan Committee), while investigating a DOD missile program, found that primes and subcontractors were pyramiding profits and thus were being paid unearned profits [Ref. 48]. The results of this investigation and subsequent publicity resulted in the Logistics Management Institute (LMI) being tasked to study DOD's profit policy. The objective of this study was to:

> Develop a rational, workable, uniform and equitable approach to target profits which will result in a wider range of profits. The study aims to develop specific guidelines to assist contracting personnel in arriving at appropriate profit rates to further national and departmental interests utilizing the profit motive of DOD contractors [Ref. 49].

2. Weighted Guidclines

In August 1963, the Department of Defense implemented for the first time the "weighted guidelines" approach by revising the Armed Services Procurement Regulation [Ref. 50]. Weighted guidelines were a direct result of the first LMI study [Ref. 51]. The guidelines were intended to ensure consideration was made of the relative value of appropriate factors in initial establishment of a profit or fee objective. The evaluation factors to be considered were:

1. Contractor input to total performance;
2. Contractual assumption of contract cost risk (type of contract, reasonableness of cost estimates, difficulty of contract task);
3. Record of contractor performance;
4. Selected factors (source of resources, special achievement);
5. Special profit consideration (development of military items without Government assistance) [Ref. 52].

Although weighted guidelines were considered an improvement over prior methods and represented a new method to determine profit, three characteristics basic to the old system remained intact. First, assignment of the basic fee rate was based on the personal judgement of the contracting officer. Second, the fee rate was based on the estimated cost of the contract. Finally, the fee rates failed to consider the contractor investment in plant equipment or working capital [Ref. 53]. Additionally, ASPR was again revised to reflect the new profit policy:

> It is the policy of the Department of Defense to utilize profit to stimulate efficient contract performance.... Negotiation of very low profits, the use of historical averages or the automatic application of a predetermined percentage to the total estimated cost of a product, does not provide the motivation to accomplish such performance.... The profit objectives must be fitted to the circumstances of the particular procurement, giving due weight to each of the performance, risk, and other factors [Ref. 54].

Weighted guidelines drew mixed reactions and was the subject of a great deal of study during the 1960's and 1970's. Concern existed over declining profits, low productivity within defense industries and an eroding industrial base. In analyzing the results and impact of weighted guidelines, a RAND Corporation study in 1969 concluded that:

1. Most firms had higher <u>target</u> fee rates after introduction of the weighted guidelines approach, but average realized fee rates ("coming-out" rates) appear to have remained about the same.

2. The weighted guidelines method resulted in spreading the distribution of going-in target fee rates.
3. The objective was achieved, if the goal of the method was to increase profit opportunities, regardless of whether or not they were achieved, by providing higher levels of target fees.
4. The goal was achieved, if the goal was to provide a wider distribution of average fees.
5. The goal was not achieved, if the goal was to increase actual fees, rather than target fees.
6. Results appear to have been mixed and on the whole unsuccessful, if the goal was to raise the profitability of defense investment [Ref. 55].

It appears clear from the above discussion, in the researcher's opinion, that the purpose and goals of the weighted guidelines approach were not fully understood.

3. Profit 76 (DPC 76-3)

The last significant study concerning profit and profit policy was called "Profit '76". Chartered in May 1975 by the Assistant Secretary of Defense for Installations, William P. Clements, and chaired by Brigadier General James W. Stansberry, the goal was to "develop any policy revisions considered necessary to encourage private investment in equipment and the associated reductions in cost" [Ref. 56]. This appears to be another way of saying "reduce DOD acquisition costs." The study eventually led to a change in DOD regulations entitled Defense Procurement Circular 76-3 (DPC 76-3) [Ref. 57].

Assistant Secretary Clements and Brigadier General Stansberry recognized a need to conduct research to analyze earnings and capital investments, determine contractors' profitability in both defense and non-defense industries, analyze contractor motivations leading to investments designed to increase productivity and lower cost, and finally, develop profit objectives designed to stop the apparent erosion of the defense industrial base [Ref. 58]. The results of the study and DPC 76-3 made two major changes to DOD's profit policy in the hopes of raising the level of contractor facility investments for the defense industry. The first modification allowed the level of facility investment to be recognized by the Government contracting officer in reaching a prenegotiation profit objective. Secondly, it permitted the imputed interest cost of the contractor's facility capital investment, as measured in accordance with Cost Accounting Standard 414, to be used as an allowable cost on most negotiated contracts [Ref. 59].

In the researcher's opinion, DPC 76-3 appears to be the groundwork for the weighted guidelines in use today. While there have been additional changes made throughout the years, they have all been designed to adjust (increase or decrease) weights assigned to various criteria used in determining profit (i.e., DAC 76-23).

The same concerns which existed in the 1960's and 1970's continue to exist today. As RADM J. S. Sansone, Jr., SC, USN, indicated on 12 July 1984, recent research studies have verified:

1. An eroding defense industrial base;
2. A limited surge/mobilization capability;
3. Capital investment in the Defense segment is low;
4. Productivity growth has been very limited;
5. Profit policy (DAC 76-23) has not motivated contractors to make significant capital investments;
6. There are gereral misunderstandings of the DOD finance policy, both within Government and the private sector [Ref. 60].

According to RADM Sansone, the harsh realities experienced by the U.S. industry are that operating profits have declined while cost of capital has dramatically increased [Ref. 60]. It is obvious that, in the researcher's opinion, the current profit policy is not as effective as originally intended.

C. CONTRACTOR MOTIVATION

Profit has continued to be the driving force in contractor motivation since the completion of the Profit 76 study in terms of a Department of Defense policy statement. The Defense Acquisition Regulation (DAR) stated:

> It is the policy of the Department of Defense to utilize profit to stimulate efficient contract performance. Profit generally is the basic motive of business enterprise. The Government and defense contractors should be concerned with harnessing this motive to work for more effective and economical contract performance [Ref. 61].

1. Profit Maximization

In addition to DOD's profit policy, there appears to be a great deal more support to indicate that profit maximization is the single most motivating factor for defense industries. Most undergraduate and graduate level economics, finance, and business courses are structured around the principle that a firm's desire is to maximize profit. As Gerald T. Nielsen indicated, "most business oriented decision makers today have been so ingrained with the principles of profit maximization that the concept seems almost intuitively obvious" [Ref. 62].

Under the classical "profit maximization" assumption, contractors are expected to shun lower fee effort in favor of an arrangement that permits higher profit potential [Ref. 63]. Dr. Peter Drucker, a strong advocate of the classical profit motive, indicates:

> Production for profit is the principle of rationality and efficiency on which the corporation must base itself.... And the demand that some criterion other than profitability be used as a determinant of economic actions rests on a misunderstanding of the nature of the economic process.... [Ref. 64]

In addition, Julius Jones and Russell Pierre, in an Air Force Institute of Technology (AFIT) thesis found profit to be the prime industry motivator. Profit maximization stood out as the single most important factor motivating the fifty defense industry firms surveyed, with sales maximization, firm perpetuation, and attainment of certain socioeconomic goals identified as additional sub-goals [Ref. 65].

Finally, the DOD and National Aeronautics and Space Administration (NASA) Incentive Contracting Guide states:

> The profit motive is the essence of incentive contracting. Incentive contracts utilize the drive for financial gain under risk conditions by rewarding the contractor through increased profit for attaining cost (and sometimes performance and schedule) levels more beneficial for the Government than expected and by penalizing him through reduced profit for less than expected levels [Ref. 66].

2. Extracontractual Motives

Contractors do not necessarily seek maximum profit on every contract. There exist other motivational forces, such as concerns for follow-on business, growth opportunities, or improvement of corporate image. These are often called "extracontractual motivators" [Ref. 67]. The U.S. Commission on Government Procurement indicated that: [Ref. 67]

> Sometimes extracontractual influences may operate in a countervailing manner with the contractual objectives specified in the contract. Government agencies generally accept the concept that these extracontractual motivators are often beyond the control of the Government.

But are they really beyond our control? What exactly are these extracontractual motivating factors and cannot the Government, once having identified them, use them to its own advantage?

A study conducted by the Logistics Management Institute (LMI) indicated that: [Ref. 68]

> There is virtually unanimous agreement among managers and analysts who have studied overall contractor motivation that, in the short run, contractor management does sacrifice short run profit on defense business in favor of achieving:
>
> 1. company growth,
>
> 2. increased share of the industry market,

3. a better public image,

4. organizational prestige,

5. carry-over benefits to commercial business (commercial spinoffs),

6. greater opportunity for follow-on business, or

7. greater shareholder expectations for future growth and profit.

Furthermore, the LMI study indicated that a company will be willing to accept a loss (or lower profit or fee) if doing so will provide an opportunity to: [Ref. 69]

1. gain competitive advantage by engaging in developmental effort in areas of potential future business,

2. acquire or retain competent personnel in scarce disciplines,

3. spread fixed costs over a substantially broader base, or

4. prevent a potential competitor from gaining entry to the market

In summary, the LMI study states: [Ref. 70]

> Whether management is operating in the company's interest or for its own personal gain, it does not attempt to maximize profit or fee on individual contracts. It attempts to optimize among many objectives, placing particular stress on those which contribute most to maintaining or improving market position and assuring the future strength of the firm. The drive for profit is not absent, but is constrained by aims which ultimately are more consequential.

Firms do indeed have more objectives than just profit. On any given contract, a contractor could have any of a number of objectives in mind. All other things being equal, a firm would tend to perform well on a contract it had just signed. However, as Dr. Robert F. Williams pointed out in a recent article entitled "So What Does the Defense Contractor Really Want?", a firm has, as a higher order, its own set of objectives and is first motivated to maximize its own benefit-cost ratio [Ref. 71]. A firm may for example, find this ratio higher for the performance of one contract than for a second contract in its plant at the expense of the second, or it may find that completing a Government contract could threaten its survival.

Dr. Williams' study indicated that Government personnel perceive the order of importance of defense industrial contractor objectives to be (in the order indicated) profit on sales, company survival, improved cash flow, development of dominant industry position, and return on investment. These objectives were followed by company growth, providing a good product, and finally public image [Ref. 72].

On the other hand, industry beliefs about its objectives were quite different. Industry personnel felt that providing a good product was by far the most important objective, followed by maintaining a long term continuing business relationship, improved cash flow, profit, and development of new capabilities. These were followed by public image and finally the use of excess capacity [Ref. 73].

The researcher believes that there should be more weight given to the concept of public image as a motivational tool than either Government or contractors are willing to accept. Quality has been neglected in American industry over the years. Both Government and industry are just now waking up to the need to improve quality. There are a number of reasons for this, including: An increased awareness for the critical need to improve reliability; to be able to compete with foreign manufacturers; and the eventual cost savings through improved quality by reduced rework time and less scrap. This idea of improving the "corporate public image" through improved quality is also evidenced by Ford Motor Company's theme of "Quality is Job 1" and the introduction of "Quality Circles" into many of the nation's industries.

Additionally, the researcher believes that corporate prestige as a motivational tool should also be given increased consideration, particularly when dealing with award fee contracts. One senior Navy Department policymaker suggested that "corporate management views the Fee Determination Official findings more as a report card than what the award fee contributed to the bottom line." Another corporate officer for a large Navy contractor confirmed this view, with some reservations, indicating that "the score, or grade, is important to us; but I can't say that it's more important than the size of the award from the (award fee) pool."

In their thesis, <u>An Assessment of Factors Which Motivate Navy Contractors</u>, Michael Jaggard and Howard Cartwright indicated that contractor objectives can be divided into contractual objectives and long term corporate goals [Ref. 74]. They indicate that the two categories are related in that the collective objectives of performing all Government contracts must reflect the overall long term corporate strategy. In addition, the following primary contractual objectives of the Government contractor have all been cited as prime business objectives: Company growth, provide a good product, develop new skills, market share, guarantee of follow on work, "mastery" (a desire to control one's own destiny), risk aversion, safeguard proprietary interests, utilize excess capacity, flexibility to customer, and improved cash flow [Ref. 75].

Jaggard and Cartwright also identified three methods to determine the contractual objectives of a contractor for a specific contract [Ref. 75]. First, a post-performance review of contractual outcomes and associated benefits to the contractor can be conducted. Inherent in this approach is the necessity to wait until performance is completed to conduct the review. Second, a list of possible contractual objectives can be provided to the contractor who can be requested to rate the relative importance of each objective as it pertained to performance on recent contracts. This "shopping list" approach may lead to biased responses. The third method is simply to ask the contractor to list the top three objectives that a firm hoped to attain by performing the contract. The researcher suspects that a weakness in this approach may occur if the contractor attempts to play "mind games" by providing those objectives the contractors think the Government wants to hear.

The researcher would also like to propose a fourth method to determine contractor objectives. This method involves evaluating the contractor in terms of his strengths and weaknesses, the economic environment, the competitive environment the contractor operates in, as well as the size and maturity of the contractor. Each of these factors may shed some light on the contractor's objectives in terms of profit. For example, if the basic economy is in a recession with relatively high unemployment in the industry, a contractor may be willing to accept a lower profit and put increased emphasis on corporate survival and maintaining his labor force. Conversely, periods of economic growth may see defense contractors willing to accept additional risks in the hopes of achieving higher profits. Firms involved with research and development activities may see the development of new capabilities, maintaining a long term business relationship, and establishing a dominant industry position as more important motivators than profit. Smaller firms may be concerned with company survival rather than profit. Growing firms, on the other hand, may be more concerned with profit and return on investment than rapidly growing or mature firms. Finally, organizations with technically competent or "state-of-the-art" contracts may see obtaining a dominant market position as more important than profit.

As Professors Greer and Liao pointed out in their paper "Contractor Hungriness and the Relative Profitability of DOD Business," it is well known that when the economy weakens, resulting in a growth of excess manufacturing capacity, real prices tend to decline with weakened profit margins [Ref. 76]. As a result, when demand falls, firms tend to engage in vigorous price competition. The amount of profit reduction contractors are willing to accept should therefore be inversely related to the decline in capacity utilization. Because the Government is a powerful buyer, contracting officers should be able to take advantage of situations where excess capacity exists to drive "hard bargains" and buy products at lower profit margins. On the other hand, when the economy is strong and there is sufficient commercial and Government business to utilize full capacity, the Government must be willing to pay the contractors a profit rate which at least reaches parity with the commercial sector. Otherwise, industry would have no incentive to accept Government contracts.

Dr. Richard F. DeMong and Dr. Daniel E. Strayer propose that firms are primarily profit oriented only under economic conditions of pure competition and then only when there is owner control of the firm [Ref. 77]. They are proponents of other motivating forces such as sales, production, or firm perpetuation overshadowing maximum profits as a motivating force.

DeMong and Strayer contend that the drive to maximize profits is diluted by the separation of owner and manager. The goals of the decision making managers may be quite different from the goals of the owners. While the owners may indeed be more concerned with maximizing their return on investment, profit maximization has been replaced among the managers by "profit satisficing," or the desire to obtain satisfactory profits. Managers are held accountable for more than just profits; they are also held responsible for company production, sales, firm perpetuation, employee morale, etc. Because managers cannot devote their full time to profit maximization, to the exclusion of all other goals, they are forced to ensure profits reach an acceptably satisfactory level, then concentrate on the other competing goals [Ref. 78].

Phillip E. Oppedahl has developed a hierarchy of needs for a corporation which parallels Maslow's hierarchy of individual needs [Ref. 79]. Just as Maslow proposed that individuals seek to satisfy the most basic human needs first (physiological needs, safety and security needs, love and belonging needs) and then seek satisfaction of higher needs (esteem, self-actualization, the need to know and understand, and esthetic needs), Oppedahl proposes that a corporation seeks to satisfy the needs of survival, profit, growth, market share, and prestige (in that order).

Survival is the most basic need. Once the need to be a "going concern" has been satisfied, the profit motive becomes the primary motivator for the corporation. However, just as DeMong and Strayer discussed the concept of "profit satisficing," Oppedahl contends that profit does not always equate to profit maximization. Rather, the concept of "adequate profit" suffices as demonstrated by the following:

> In terms of Government contracts, growth is associated with more contracts and and larger target costs. Note that with the profit need satisfied, greater size contracts become the driving motive. This will tend to explain why some firms will spend to target cost and beyond at the expense of a share ratio loss of profit. The other aspect of growth, namely technical capability, is also very important to a defense contractor. Most

DOD contracts are labor intensive and highly technical in scope. Highly educated and qualified personnel are very important to the growth of a DOD contractor, therefore, sacrificing profit share may be attractive to a contractor relative to maintaining and increasing technical competence [Ref. 80].

While the DOD and NASA Incentive Contracting Guide recognizes the profit motive as the "essence of incentive contracting," it also recognizes that other extracontractual factors can be significant motivators to the Defense contractor. These factors include growth, new product improvement, prestige, improved public image, social approval, national defense goals, potential for follow on business, commercial application, excess capacities, increased profits on other contracts through shared overhead, and excelling for the sake of excellence. In addition, DOD "recognizes that contractors will, generally, optimize, not maximize, profit" [Ref. 81].

Finally, in his book Arming America: How the U.S. Buys Weapons, J. Ronald Fox contends that:

> Profit is not a defense contractor's only concern when bidding on or conducting a development or production program. Defense contracts are sought to cover payroll and overhead costs, and to provide company personnel with the opportunity to develop technical and managerial skills useful in commercial and defense business. Once a contract is won, a company seeks every opportunity to add work and funds to the program. The need for follow on work is crucial, since (1) the initial effort to secure a contract involves a large outlay of money, and (2) there is usually a long time lapse between contracts for the same weapon system [Ref. 82].

D. CONCLUSION

So what's the answer? Is "profit as a motivational tool" fact or fiction? The answer appears to be "a little of both." There is no clear cut answer to the question. While it is clear that profit is not the only motivating force for Government contractors, there are times when profit would certainly be the prime motivational tool, such as periods of strong economic growth as discussed earlier. In addition, it is the researcher's opinion that the DOD profit policy evolved into what it is today because it is relatively easy for contracting officers to understand; we have been so "ingrained with the principles of profit maximization that the concept seems almost intuitively obvious."

It may be more appropriate to think of profit as a "satisficer" rather than a "motivator." Contractors will certainly not perform without a certain profit level. However, once that level of profit is achieved, they may not increase performance with additional profits alone.

It is incumbent upon the contracting officer to recognize that these extracontractual motivating forces do in fact exist. The contracting officer must examine each contracting situation carefully and attempt to determine which factors (in addition to profit) will stimulate and motivate the contractor to improve his performance. The proper motivational mechanism must then be incorporated into the contract and the contract properly administered to ensure effective results.

It must be remembered that industry's top rated objectives are to provide a good product and to maintain long term continuing business relationships. These objectives indicate more concern with long term profit objectives than with short term objectives. In the words of one Defense contractor corporate officer,

> They (contractor objectives) are so closely interrelated, it is difficult to rank one above the other or claim to have one objective without the other one.... We're all in this business to make money.... So to say that profit is not a primary objective would be wrong. But it is not the only objective.... Of course we want to survive and grow. But without a good reputation and adequate profits we are out of business. All four, company survival, company growth, promoting the company's reputation, and profit are primary objectives on each and every Government contract. No one objective is more important than the other [Ref. 83].

The theoretical background and framework of CPAF contracts have been examined along with those factors and influences which motivate a contractor. The next chapter will report the results of an examination of various CPAF contracts conducted in an attempt to gain insight into the award fee determination process.

IV. STRUCTURING AN AWARD FEE

An evaluation of the award fee determination process in CPAF contracts is really a two step process. The first step involves an examination of pre-award activities and the development and structuring of contract elements which influence the award fee determination process. The second step involves contract administration functions in terms of evaluation and fee determination procedures. This chapter will examine the first step in this process and attempt to answer the following questions:

1. What considerations go into determining the size of the base fee? How large should the base fee be?
2. How should the award fee, which remains in the award fee pool after the fee determination is made, be handled?
3. What considerations are necessary in formulating the evaluation criteria?
4. How long should the award fee evaluation period be? What criteria should be used in making this determination?
5. How should the award fee computation formulas be developed? What considerations are necessary?

A. FORMULATION OF THE BASE FEE

The FAR limits the size of the base fee to three percent of the contract target cost. Additionally, Chapter II pointed out that the base fee could, in fact, be zero. At what level should the base fee be set? Should the base fee be zero or three percent, or should it be set somewhere between the two limits?

The Commission on Government Procurement (COGP) in 1972 concluded that the "overall risks under a CPAF contract were at least equal to the risks under a cost-plus-fixed-fee (CPFF) contract" [Ref. 84]. It was therefore concluded that the base fee of a CPAF contract should be at least equivalent to that which would be appropriate if the contract were CPFF, with the provision for subjective fee adjustments to be both upward and downward. The rationale here is that the CPAF contract was devised as an incentive type, with a subjective fee adjustment, to be used when the anticipated results were of such a nature that a formalized CPIF sharing formula, for both upward and downward adjustments of fee, could not be developed. The Commission also concluded that "there is no particular justification for the CPAF base fee to be inordinately low (three percent maximum) with an award fee upward only" [Ref. 85].

A CPAF contract lies between the spectrum of a CPFF contract, where the Government assumes 100 percent of the risk, and a firm-fixed-price (FPP) contract, with the contractor assuming 100 percent of the risk. Between these two types of contracts, tradeoffs occur concerning the "risk sharing ratio." As such, the risks under a CPAF contract are not at "least equal to those under a CPFF contract". If the risks were equal, a CPFF contract should be used rather than a CPAF contract.

If the logic of the Commission on Government Procurement were followed, the base fee would be set at seven or eight percent. It must always be remembered that one of the primary purposes of a CPAF contract is to motivate the contractor. The higher the base fee becomes, the more the contract appears to approach a cost-plus-fixed-fee contract with award fee provisions (CPFF/AF). Additionally, the larger the base fee becomes, the smaller the award fee pool must be to comply with the statutory fee limitations discussed in Chapter II. To be a sufficient motivational tool, the award fee must be material in amount; large enough for the contractor to be incentivized to "achieve the carrot at the end of the stick". The smaller the award fee, the the more likely it is that the contractor will lose his motivation to earn the fee because, as one corporate officer put it, "the trouble and expense is not worth the payoff."

It would appear logical to establish the base fee at as small a level as possible, at or below three percent. A CPAF contract in its true form would have a zero base fee, and maximize the award fee pool to gain the greatest motivational leverage over the contractor. The majority of Government personnel interviewed indicated that the base fee should be three percent, because it's "authorized in the FAR," or "it appears to be the standard; three percent has become a way of life." One Acquisition Branch Manager for a major Navy project indicated that the size of the base fee should "depend on the complexity of the project. It should be flexible between 1.5 and 5 percent depending on the risk. The average is three percent and it should be 0 percent only with a stable product." He continued that if the product is truly stable, a fixed-price type of contract should be used. The majority of the contracts examined by the researcher contained a base fee of three percent, with only one contract having a zero base fee.

In the researcher's opinion, contracting officers appear to have lost sight of the basics. According to Dr. Meiners, a noted specialist with CPAF contracts, "the base fee, when originally conceived, was intended only to cover the contractor's unallowable costs, which historically have been two percent."[4] In the researcher's opinion, this naturally assumes that there is a potential for the contractor to earn none of the fee available in the award fee pool. Dr. Meiners also pointed out that "there is no other type of contract where funds are set aside specifically to cover unallowable expenses." These expenses are normally covered by the standard profit or fee the contractor earns.

In the researcher's opinion, the use of a base fee is, therefore, only for those situations where the Government and the contractor are so concerned with and anticipate that the contractor may perform so poorly that the contractor will earn only the base fee. This would certainly be the exception rather than the rule.

B. AWARD FEE POOL

How should funds which remain in the award fee pool, after the award fee determination is made, be utilized? The answer to this question is negotiable and should be resolved during the formation of the contract and contract negotiations. Two options exist to handle the unearned award fee. The first option is to have that amount not awarded lost as far as the contractor is concerned. The second option is referred to as a "roll over," where a percentage of that

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[4]Interview conducted on 26 July 1984

award fee which was not earned by the contractor is rolled forward to subsequent periods.

The contracts examined and personnel interviewed were equally split regarding the roll over issue. Roughly half of the contracts reviewed contained roll over provisions ranging from 40 to 80 percent of the unearned award fee. Of those personnel interviewed, those who used roll over provisions favored their use, while those who did not use roll overs felt very strongly against them.

Recent guidance from the Naval Material Command (NAVMAT) is that:

> Carry forward provisions for unearned award fees are <u>expressly</u> <u>prohibited</u> (emphasis added) without prior approval from Chief of Naval Material (CNM). Any portion of available award fee not awarded during an evaluation period is not transferable to another period without CNM approval. [Ref. 17]

The researcher predicts that the impact of this recent policy change will be to significantly reduce the use of roll over provisions.

What are the major concerns with the roll over issue? To answer this question perhaps it may be appropriate to examine some of the advantages and disadvantages of roll over provisions.

1. Advantages

Some argue that a roll over provision enhances the ability to motivate or incentivize the contractor by making the award fee pools in subsequent periods more attractive. One Administrative Contracting Officer (ACO) indicated that the goal is to "incentivize the contractor; if it takes fifteen bites (at the apple), so be it."

One Business/Financial Manager indicated that a "roll over provides a levered fee at the end of contract performance." This works particularly well with contractors who have multiple contracts. The roll over provision can be used as a tool to protect one project against some other projects. This would be particularly true if those "other projects" were not award fee contracts or if award fee contracts did not have roll over provisions.

Another Business/Financial Manager indicated that, if a roll over provision is not used, the tendency is for the PEB to inflate the grades given the contractor. There may be some truth to this assumption; however, supporting evidence could not be found. Along these same lines, the assumption is that if a roll over provision were used, the PEB would be more likely to give honest grades to the contractor knowing that the "carrot and stick" effect can be retained with the possibility to recover from the loss and regain some of the lost award fee in subsequent periods.

Finally, an Acquisition Branch Manager indicated that if the award fee pool were significantly small as to not motivate the contractor to the degree desired, a roll over provision would be desired. This would enhance the award fee pool in subsequent periods in the hopes of improving the contractor's motivation.

2. Disadvantages

Without exception, all those personnel who did not favor use of award fee roll over provisions did so because they perceived the roll over to be a "gift to the contractor" and allowed the contractor "multiple bites at the apple". One individual even suggested that loss of the unearned award fee was a larger incentive to the contractor. The contractor would theoretically maximize efforts during each evaluation period knowing that any award fee not earned would be lost.

A second disadvantage of roll over provisions is that they tend to create a "bow wave" effect by pushing problems to a later date with the hope that the lost award fee can be regained at a later date. The problem this creates is that often the number of unresolved issues becomes too large to manage effectively.

An examination of one contract which did not use a roll over provision provides some additional information.

TABLE 1

Examination of Award Fee Without Roll Over Provision

Period	Award Fee Pool	Rating	Earned Award Fee	Unearned Award Fee
1	$130,335	86%	$112,088	$18,247
2	86,890	94%	81,677	5,213
3	88,173	95%	83,764	4,409
4	87,909	94%	82,634	5,275
5	88,259	95%	83,846	4,413
6	261,640	95%	248,558	13,082
TOTAL	$743,206		$692,567	$50,649

Table 1 provides data over six evaluation periods for the original contract. Table 2 contains the same data that appeared in Table 1 except that it has been modified by the researcher to include a 40 percent roll over provision. As can be readily seen when comparing Table 1 with Table 2, the roll over provision quickly inflates the award fee pool. If not properly planned for, this inflation of the award fee pool can lead to what some personnel consider "excessive" fees. Table 3 shows the impact on the same data in table 1 using an 80 percent roll over provision. As can be seen in Table 3, an additional $30,000 in award fees are earned over that shown in Table 1 Some of those interviewed consider this a needless "give away".

TABLE 2

Examination of Award Fee With 40 Percent Roll Over

Period	Award Fee Pool With 40% Roll	Rating	Earned Award Fee	Unearned Award Fee
1	$130,335	86%	$112,088	$18,247
2	94,189	94%	88,537	5,652
3	90,434	95%	85,912	4,522
4	89,718	94%	84,335	5,383
5	90,412	95%	85,892	4,520
6	263,448	95%	250,276	13,172
TOTAL	$758,536		$707,040	$51,496

3. Summary

What then is the answer to the roll over issue? It really boils down to a judgement call. As indicated earlier, NAVMAT's guidance expressly prohibits the use of roll over provisions without prior CNM approval. If the reader is of the school of thought that the contractor should never get another bite at the apple, then clearly roll over provisions are never appropriate.

The researcher is of the opinion that circumstances may exist which favor use of roll over provisions and this option should be considered. An 80 percent roll over, in

TABLE 3

Examination of Award Fee With 80 Percent Roll Over

Period	Award Fee Pool With 80% Roll	Rating	Earned Award Fee	Unearned Award Fee
1	$130,335	86%	$112,088	$18,247
2	101,488	94%	95,399	6,089
3	93,044	95%	88,392	4,652
4	91,631	94%	86,133	5,498
5	92,657	95%	88,024	4,633
6	265,346	95%	252,079	13,267
TOTAL	$774,501		$722,115	$52,386

the researcher's opinion, is too high, because it enhances the idea held by many that award fees are "give away programs". A 20 percent roll over may be too low to be effective. Perhaps a 40 or 60 percent roll over provision may be appropriate. A study to determine the most "cost effective" roll over is beyond the scope of this thesis. If a roll over is used, consideration must be given to the "inflationary factor" demonstrated in Tables 1 and 2, something which has not received adequate consideration in the past.

One additional observation about the use of roll over provisions may be appropriate. If the reader is primarily concerned with cost control, then controlling costs through the use of no roll over provision is not the most logical approach. Table 2 shows that the additional award fee earned with the use of a 40 percent roll over provision was $14,473 ($707,040 minus $692,567), which is less than two percent of the original award fee pool. It would seem to be more logical to focus cost control efforts at direct labor hours and other areas where the large dollar expenditures occur.

Of those contractor representatives interviewed, all were in favor of roll over provisions, which should not be a surprise.

C. EVALUATION CRITERIA

Chapter II identified the evaluation criteria most commonly used as the adjective-type standard rating system which indexes a performance quality adjective and corresponding explanation to a percentage of the potential award fee available during the evaluation period. Is this really the best way to structure the performance ratings? What considerations should be used in developing the evaluation criteria? These and other issues will be addressed in this section.

1. Performance Rating

There are many rating plans being used today. No two systems will be, nor should they be, identical. The system selected must be tailored to the individual, unique requirements and be that system which best fits the needs. However, structuring of the rating plan can lead to confusion for both the contractor and Government personnel. Consider the following examples, all extracted from different contracts and all representing the highest performance rating in the contract:

1. Superior Performance: Represents 80 to 100 percent of the potential award fee. The contractor has demonstrated an overall level of performance which exceeds the contract requirements.
2. Superior Performance: Represents 86 to 100 percent of the potential award fee. The contractor has demonstrated an overall level of performance which substantially exceeds the contract requirements.
3. Superior Performance: Represents 86 to 100 percent of the potential award fee. The contractor has demonstrated an overall level of performance which greatly exceeds the contract requirements.
4. Excellent: Represents 91 to 100 percent of the potential award fee. The contractor's performance

greatly exceeds the merely satisfactory level of efforts. The evaluator cannot cite relevant areas for improvement.

5. Excellent: Represents 91 to 100 percent of the potential award fee. The contractor's performance exceeds requirements by a substantial margin. The evaluator cannot cite relevant areas for improvement.

6. Excellent: Represents 86 to 100 percent of the potential award fee. The contractor's performance greatly exceeds the merely satisfactory level of performance. The evaluator cannot cite relevant areas for improvement.

7. Outstanding: Represents 86 to 100 percent of the potential award fee. The contractor's performance exceeds the minimum by a substantial margin,; and the monitor can cite some area for improvement, most of which are minor.

The first three examples above came from the same project office, but were in contracts awarded to three different contractors. This led to some confusion within the project office. Was "superior" performance really 80 percent, or was it 86 percent? In addition, what's the difference between "exceeds", "substantially exceeds", and "greatly exceeds"? Furthermore, what's the difference between "superior performance", "excellent", and "outstanding"? What does it mean to "exceed the minimum requirements by a substantial margin"? If a contractor has "some areas of improvement", is his performance truely "outstanding"?

Even the recommended evaluation standards system recommended by NASA (discussed in Chapter II) raises some questions and creates confusion. Consider the following:

> Excellent: Represents 91 to 100 percent of the potential award fee. Performance is outstanding in most respects, approaching the best that could be performed by a qualified contractor. Contractor has greatly exceeded quality, schedule, output and overall performance which would be expected of an average contractor. Areas of deficiency are very few and relatively unimportant in nature. Contractor shows initiative in executing the job and invoking improvements.

In the above example, the adjective rating is "excellent", yet the description reads "performance is <u>outstanding</u> in most respects." Do "excellent" and "outstanding" mean the same thing?

The problem appears to be one of symantics. What may be "excellent" to one individual may not mean the same to another. In addition, the adjective ratings are relative; there do not exist any standards with which to rate or compare one "excellent" rating with another.

Still another area for confusion is the number of rating categories. Consider the following examples:

1. Contract Number 1

   a) Superior Performance: 80 to 100 percent.

   b) Satisfactory Performance: 50 to 80 percent.

   c) Marginal Performance: 20 to 50 percent.

   d) Unsatisfactory Performance: 0 percent.

2. Contract Number 2

   a) Excellent: 91 to 100 percent.

   b) Good: 66 to 90 percent.

   c) Satisfactory: 41 to 65 percent.

   d) Marginal: 21 to 40 percent.

   e) Unsatisfactory: 20 percent and Below.

3. Contract Number 3

   a) Outstanding: 86 to 100 percent.

   b) Excellent: 75 to 85 percent.

   c) Good: 65 to 74 percent.

   d) Acceptable: 50 to 64 percent.

   e) Marginal: 30 to 49 percent.

   f) Minimal: 0 to 29 percent.

In Contract Number 1 of the above examples, is an 80 percent score "satisfactory" or "superior"? Are 51 and 79 percent scores in Contract Number 1 both "satisfactory? As the number of rating categories are increased from four in Contract Number 1 to six in Contract Number 3, this confusion is reduced. The greater the number of rating categories and the more specific each category is, the less confusion there is likely to be.

If it is necessary to use a combination of adjective and numeric ratings, the researcher suggests that the percentages assigned to each category are flexible and may be adjusted. In addition, each category may be further broken down into "plus" and "minus" ratings. For example, the "Good" category in Contract Number 3 above may be subdivided as follows:

Good Plus: 72 to 74 percent.

Good: 68 to 70 percent.

Good Minus: 65 to 67 percent.

The particular structure chosen is strictly up to the creativity of the Contracting Officer.

The performance rating exists only for the benefit of the contractor. The ratings give the contractor something with which to relate the numerical grades. In the researcher's opinion, this can be accomplished with the criteria description just as well as with an adjective rating. By eliminating the adjective rating and relying strictly on the numerical rating, some of the confusion can be reduced and the contractor can decide whether an 89% is "excellent" or "outstanding".

It is possible to improve on the rating plans currently being used by eliminating the adjective descriptions and increasing the number of rating categories. Such an example would be as follows: [Ref. 87]

1. Represents 91 to 100 percent of the potential award fee. The contractor's performance exceeds requirements by a substantial margin. The evaluator cannot cite relevant areas for improvement.
2. Represents 83 to 90 percent of the potential award fee. The contractor exceeds in overall performance requirements. The evaluator may cite one or more areas for improvement but they are relatively minor in terms of potential program impact and they are substantially offset by better performance in other areas.
3. Represents 75 to 82 percent of the potential award fee. The contractor's performance meets all requirements. The performance is neither significantly superior nor significantly inferior. Areas of risk are of no greater degree than would ordinarily be expected in the performance of a typical contract of this size and complexity.

4. Represents 67 to 74 percent of the potential award fee. The contractor's performance is adequate although the evaluator may cite several areas for improvement, these are offset by better performance in other areas being evaluated and deficiencies are of a minor nature. This level of achievement would be the norm for contractors completing jobs and the contract on schedule with reasonable quality and cost.

5. Represents 50 to 66 percent of the potential award fee. The contractor's performance fails to meet all requirements. There are areas of good or better performance but these are offset by lower rated performance in other areas.

6. Represents 31 to 49 percent of the potential award fee. The content and quality of the contractor's performance are close to being adequate, although there are many areas for improvement. No major deficiencies are cited.

7. Represents 0 to 30 percent of the potential award fee. The content and quality of contractor performance in at least one area are deemed by the evaluator to need substantial improvement. Contractor performance in the area being evaluated is considered to be such that a potentially adverse impact is foreseen.

The need for improvement is such that Government action may be required.

It should be noted that as the number of categories is increased, the number of borderline comparisons also increase. If the number of categories is too large, it then becomes a problem of being able to differentiate between 74 or 75 percent adequately.

2. Performance Evaluation Criteria

Structuring the performance evaluation criteria is the heart of the award fee process. Criteria must be selectively identified which, when implemented, will truely motivate the contractor. A number of the interviewees felt strongly that the development of standardized evaluation criteria should not be recommended. The Program Manager and Contracting Officer must maintain flexibility to again structure the criteria to the individual situation. Standardized evaluation criteria would reduce the Program Manager's flexibility to manage.

Those individuals who draft the evaluation criteria must tailor the criteria to the individual contract. As one Business/Financial Manager indicated, the first step in this process is to gain an understan ing of the environment unique to the individual contractor. This may likely require a visit to the contractor's plant and interviews with key individuals. There are some things which the contractor may be highly motivated to perform without the Government having to incentivize the contractor. As discussed in Chapter III, some of these considerations include "extracontractual motivators" such as company growth, an increased share of the industry market, a better public image, carry-over benefits to commercial business, greater opportunity for follow on business, and greater shareholder expectations for future growth and profit. In addition, the Government does not want to apply motivational forces to a contractor for those things which the contractor already does well. The Government must consider the contractor's individual strengths and weaknesses and only incentivize the weaknesses. However, the Government should be ready to incentivize areas which might now be strengths but become weaknesses at a later date.

A second concern is the number of evaluation criteria to be used. One Program Manager indicated that if "you incentivize everything, you end up incentivizing nothing." The contractor cannot be overburdened with so many different criteria upon which to focus management talent that the contractor becomes demotivated. As several interviewees indicated, there are generally three major categories to structure evaluation criteria around. The criteria are:

1. Technical Performance

2. Schedule

3. Cost Control

A fourth category of "Management Performance" is often identified as a separate category or is combined with Technical Performance. Still a fifth category periodically used is "Design to Cost". The consensus of opinion from those interviewed is that the number of categories used for evaluation criteria should be limited to three or four at the maximum. The researcher believes that too many elements will dilute the motivational effect of the award fee concept, while too few elements will fail to adequately measure total contractor performance.

The perceived problems from interviewees with evaluation criteria currently being used are that they are not weighted properly nor are they well quantified. Evaluation criteria which are not well quantified leave too much room for interpretation, and some individuals feel it leaves <u>too</u> much room for subjectivity. For example, the evaluation criteria in one multi-million dollar contract examined are as follows:

1. Technical Performance: The contractor shall be evaluated as a System Prime Contractor (SPC) under this contract based on achievement and conformance to the specification. This shall include the evaluation of

the contractor's performance of all design, fabrication, reliability and maintainability, software, integrated logistics support, system interface tests, system integration, services, and system demonstrations. The assessment of SPC performance will also be evaluated against lower indentured specifications and the contractor's achievement of technical objectives cited in management plans.

2. Management:

a) The award payments for this area shall be based on the contractor's achievements in Management.

b) The criteria to be utilized in determining management performance will include the effectiveness of the contractor's management, working in association with the Navy, to achieve an operational system. This includes the management of interfaces with various Navy activities and Government Furnished Equipment (GFE) suppliers. The specific areas to be reviewed include the following:

1. Management of GFE;

2. Relationships with associate contractors;

3. Configuration management;

4. Effectiveness of forecasting potential problems and a suggested resolution to minimize program impact; and

5. Compliance with Interface Control Documents (ICD).

3. Schedule:

a) The award payments for this area shall be based on the contractor's achievements in providing the necessary management controls and assets to accomplish the delivery of data, hardware, software, training, maintenance, support items and the assistance to the Navy in in maintaining total program schedules.

b) The award fee evaluation relative to delivery shall consist of a review of the following criteria:

1. Delivery of all contract data requirements in accordance with the contract Data Requirements List.

2. Achievement of scheduled design, fabrication, tests, system integration, and demonstration milestones (within the projected program schedule).

3. Recognition of potential delivery problems, recommendations as to resolution and successful attainment of agreed upon methods of resolution to minimize program impact.

4. Cost: The award payment for the area shall be based on the contractor's ability to manage the costs on the Full Scale Development Program including cost reports and the ability to implement cost avoidance measures.

5. Design to Cost: The award payments under this area shall be based upon the contractor's achievement of the objectives of the Design to Cost Plan.

Much of the criticism concerning CPAF contracts today stems from the belief by many that the determination of multi-million dollar award fees is too subjective. The evaluation criteria when not well-defined, as in the example above, highlights just how subjective this determination can be. This criticism can be reduced by better defining the evaluation criteria and lending a degree of objectivity to the evaluation, or at least becoming less subjective. An example of better defined evaluation criteria will be given at the end of this section.

The Government has the ability in the contract to shift evaluation criteria weights from one period to the next. It is the general feeling among those interviewed that this flexibility is not being utilized to the maximum extent possible by those using CPAF contracts. In the Concept Exploration phase of a system's development, technical performance may be the most important evaluation element and should be weighted high, perhaps 50 percent. Schedule performance and cost control may be less important and management performance may be so unimportant as to be weighted at 0 percent. However, as the product moves into production, management performance becomes more important as the transition is made from development to production. It must be remembered to change the weightings to reflect the changing conditions. The problem with shifting the evaluation criteria weights are first to determine how the weights are to be shifted, and secondly, to make the decision and inform the contractor in a timely manner to allow the contractor time to respond and make the necessary adjustments within the organization <u>prior to</u> the start of the evaluation period. This is often difficult to accomplish and as one Business/Financial Manager pointed out, this flexibility is often not utilized by the Program Office.

As one senior manager who formulates policy indicated, cost control is always of major concern. Some of the criticism of CPAF contracts in recent months has arisen from the concern that cost control has not received enough attention and weight in the evaluation criteria. The suggestion was made by the researcher that guidance be promulgated "highly recommending" that cost control be given considerable weight relative to the other evaluation criteria. Without exception, all those interviewed strongly felt that this was not proper. The Program Manager must be able to remain flexible in order to tailor the criteria to the situation. However, the consensus was that cost control should always be an evaluation element. NAVMAT also requires that cost control always be included as one of the evaluation criteria [Ref. 17].

If it is not desired to standardize the weight given to cost control, perhaps it may be appropriate to identify evaluation criteria which should be recommended for use. It is interesting to note that guidance does not exist which even identifies the evaluation criteria which must be used for cost control. This flexibility also rests with those who tailor the criteria to the unique situation.

Another idea was suggested that a mathematical model be developed which would identify the weighting to be applied to cost control. The development of such a model is beyond the scope of this thesis. However, some thoughts on the subject are appropriate. There is some value to giving cost more weight (i.e., 30 to 40 percent) because it demonstrates to the contractor that costs are of interest. In the researcher's opinion, the danger lies in that the contractor may then decrease management attention on technical performance or the schedule effort. As Dr. Meiners pointed out "cost is a function of cost." Cost would not be an independent variable in any mathematical model. Cost is dependent on both schedule and technical requirements. Costs may be better controlled by placing more emphasis on schedule. As the schedule improves, lower costs will generally result from reduced direct labor hours and overhead charges. Work generally appears to expand by the amount of funds the Government has. The longer the contract is in place, the higher the costs tend to be.[5]

While the FAR is specific in requiring the inclusion of the evaluation criteria in the contract, it does not indicate that it is mandatory that these criteria be negotiated with the contractor. The researcher can see advantages to not negotiating the evaluation criteria. However, if the contractor's fee is dependent upon how well the evaluation criteria is written and understood, it is evident that the contractor would have a vested interest in the development of the criteria. As such, the contractor should, as a minimum, be authorized to provide some input into the development of the evaluation criteria.

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[5]Interview conducted with Dr. Arthur C. Meiners, Jr., on 26 July 1984.

It was the consensus from those interviewed that there is no cookbook solution to the formulation of evaluation criteria. Each set of criteria must be individually tailored to the unique situation. However, it is appropriate to examine major considerations to use when formulating well-defined evaluation criteria. These considerations are provided in Appendix D for review. Appendix D identifies three evaluation criteria which are reccmmended for use by the researcher. These criteria are technical/management performance, schedule performance, and cost performance. In addition to these criteria, major areas of consideration are identified for each of the three criteria, which could be modified for any of the eighteen contracts reviewed. The more detailed the evaluation criteria, the easier it becomes to be somewhat objective in a process which is inherently subjective. The less subjectivity involved with the award fee determination process, the less there will be criticism. This subjectivity can be reduced, in the researcher's opinion, by increasing the number and detail of elements when evaluating performance in each criteria.

If a fourth evaluation element is to be used, it should be logistics supportability, recognizing integrated logistics support equal in importance to cost, schedule, and technical performance. Although previously not used to evaluate contractor performance, logistics supportability is receiving increased attention and visibility. Where appropriate, major considerations in structuring evaluation criteria for logistics supportability include: [Ref. 88]

1. Maintenance Planning: The contractor should participate in the process to evolve and establish maintenance concepts and requirements for the lifetime of a material system, and this participation should be evaluated.
2. Supply Support: All management actions, procedures, and techniques used to determine requirements to acquire, catalog, receive, store, transfer, issue, and dispose of secondary items should be evaluated. This includes provisioning for initial support as well as replenishment supply support.
3. Support Equipment: The contractor should participate and be evaluated in the identification and acquisition of all equipment (mobile or fixed) required to support the operation and maintenance of the material system. This includes associated multiuse end items, ground handling and maintenance equipment, tools, calibration equipment, test equipment, and automatic test equipment.
4. Technical Data: The contractor should be evaluated on the completeness, accuracy, and timeliness of

technical data provided to support the system. This includes recorded information regardless of form or character (such as manuals and drawings) of a scientific or technical nature. Computer programs and related software are not technical data; however, documentation of computer programs and related software are. Also excluded is financial data and other information related to contract administration.

5. Packaging, Handling, Storage and Transportation: The contractor should be evaluated on the resources, processes, procedures, design considerations, and methods utilized to ensure that all system equipment, and support items are preserved, packaged, handled, and transported properly, including environmental considerations, equipment preservation requirements for short and long term storage, and transportability.

6. Design Interface: The relationship of logistics related design parameters, such as reliability and maintainability, readiness, availability, and support resource requirements should be evaluated. These logistics-related design parameters should be expressed in operational terms rather than as inherent values and specifically relate to system readiness objectives and support costs of the material system.

3. Summary

In summary, the development of the evaluation criteria cannot be accomplished in a vacuum. An evaluation of the contractor's strengths and weaknesses must be completed, with the weaknesses highlighted in the evaluation criteria.

D. EVALUATION PERIOD LENGTH

The Naval Material Command (NAVMAT) specifies that generally, each performance evaluation period will not be greater than three months [Ref. 89]. How long _should_ the award fee evaluation period be? What criteria should be used in making this determination? These criteria have yet to be formalized and published as guidance.

1. Determination Criteria

Before it is possible to answer the first question, it is necessary to examine the criteria used in selecting the length of the evaluation period. These elements, as identified in several interviews, in no particular order of importance, are:

1. Projected length of the contract;
2. Contract complexity;
3. Size of the contract; and

4. Administrative requirements.

a. Projected Length of the Contract

The estimated length of contract performance is one of the key elements in selecting length of the evaluation periods. If a contract is expected to run for nine months, such as in the overhaul of surface combatant ships, then three month evaluation periods are almost mandated in the researcher's opinion. This gives the Project Officer three data points with which to evaluate cost and performance trends, as well as provides flexibility to twice adjust evaluation criteria weightings, if necessary, to redirect the contractor's efforts. On the other hand, in the case of a contract which is expected to last longer (i.e., 18 to 36 months), it may be appropriate to extend the interval of evaluation periods to perhaps four, six, or nine months.

b. Contract Complexity

As one Business/Financial Manager indicated, in a complex contract with many events and key milestones occurring quickly, the longer the wait between evaluation periods, the increased probability that critical problem areas will not be highlighted and brought to management's attention in a timely manner. If there are delays or significant problems which go undetected, this will result in a bow wave effect and impact subsequent events in future periods.

As another Business/Financial Manager indicated, another consideration is that events which happened more recently and are fresh in the minds of performance evaluators will tend to bias the evaluation. This appears to be true for all evaluation periods of considerable duration (i.e., six months or more), but is particularly evident with more complex programs. This problem may be reduced by shortening the length of the evaluation period to three or four months. The researcher suggests that a creative CPAF contract may have variable length evaluation periods if the amount of work to be done in some periods is less than in others. Such a situation may occur in a research and development contract when the initial effort is small compared to other periods.

c. Size of the Contract

The general rule of thumb appears to be, from those interviewed, that the larger the size of the contract, in terms of target cost and award fee pool dollars, the shorter the evaluation period should be. This thought stems from the fact that the Program Managers are custodians of public funds and the belief by many that CPAF contracts are really "give away" programs. The more frequently the PEB meets and the FDO provides feedback to the contractor, the better "upper management" and the "watchdogs" feel about the job being performed because it appears that the Program Manager is maintaining tight control over the project.

d. Administrative Requirements

Most interviewees for this study were in agreement that CPAF contracts are the most difficult contracts to administer because of the increased administrative burden in terms of manhours required to monitor performance, gather the PEB together for deliberations, and to publish the FDO findings. One individual even went as far as to say that "award fees double the complexity of administering contracts."

The award fee provisions force Government representatives and managers to pay closer attention to the contractor and understand both the contractor's actions as well as the contractor's strengths and weaknesses. There is not much room for doubt on the part of Government representatives. Government managers must be sure of their positions, more so than with any other type of contract. As one Cost Analyst indicated, unique features of CPAF contracts require that Government personnel spend more time in administering CPAF contracts.

The time spent in monitoring performance cannot be reduced. However, the time spent in preparing testimony for the PEB, the PEB deliberations, and administrative requirements of the FDO can be reduced by extending the evaluation periods.

Still another problem of short (i.e., three months) evaluation periods is timely feedback to the contractor early enough to modify the contractor's performance in subsequent periods. NAVMAT's guidance is that the Award Fee Board (PEB) shall meet as "reasonably close to the end of an award fee period as possible" [Ref. 90]. In reality, this means two to three weeks (10 to 15 working days) after the end of the evaluation period. The following sequence of events was extracted from one contract reviewed, and is typical of most contracts:

1. Within fifteen (15) days from the receipt of testimony and input to the PEB, the Board shall prepare the performance evaluation and present it to the FDO.
2. Within five (5) days from receipt of that evaluation, the FDO shall submit to the Contracting Officer his determination of award fee.
3. Within five (5) days from receipt of that determination, the Contracting Officer shall notify the contractor in writing of the FDO's determination.

4. Within five (5) days from receipt of the Contracting Officer's notification, the contractor may submit to the Contracting Officer any exception with respect thereto. In support of his reclama, the contractor may furnish a written description of his performance during the period under consideration. This description shall clearly identify specific evaluation categories, factors, elements, and the contractor's own rating thereof.

5. Within five (5) days from receipt of the contractor's reclama, the Contracting Officer shall submit it to the FDO.

6. Within ten (10) days from receipt thereof, the FDO shall provide to the Contracting Officer a <u>final performance evaluation</u> (underline provided by researcher) and determination of the award fee.

7. Within five (5) days from receipt of the final determination, the Contracting Officer shall notify the contractor in writing of that final determination.

8. Within five (5) days from the date of this notification, the Contracting Officer shall issue a unilateral modification to the contract to provide for the award fee.

If the above sequence of events were followed, the contractor would not receive formal written notification of the FDO's final performance evaluation until 50 days following the deliberations of the PEB. This is clearly too late to modify the contractor's performance in a three month (90 day) evaluation period; With over 50 percent of the subsequent period past, the contractor would not be given an opportunity to modify performance in response to the last performance evaluation and any shifting of weights for the evaluation criteria. It can be argued that the contractor knows well in advance of the FDC's final performance evaluation where improvements are needed through informal lines of communications. However, if the FDO's final evaluation does not agree with the informal communication, then needless energy and resources have been expended and the contractor may in fact become demotivated.

Even if the contractor is informed of the FDO's determinations at the conclusion of the PEB deliberations, 15 to 20 percent of the next evaluation period could have expired if the PEB deliberations were lengthy or the PEB met in the third week of the new period.

.In the researcher's opinion, one solution to this problem appears to be to have the PEB meet during the last ten working days of the evaluation period and encourage the FDO to be a member of the PEB. The FDO should then be in a position, after hearing all the testimony, to provide the contractor with a "preliminary" determination in terms of what areas the contractor should focus his attention on in the following period. Some FDOs may be reluctant to provide a "preliminary" determination. However, if the contractor accepts the preliminary determination as just that, and recognizes that it is not binding on the FDO, this reluctance should not be a problem for the FDO.

2. Determining the Evaluation Period Length

What then is the answer to the question "how long should the award fee evaluation period be"? There is no cookbook solution. The Program Manager must retain flexibility in this determination and reach a decision after evaluating all the "pros" and "cons". The majority of opinion from those interviewed favor the three month, or quarterly, evaluation period. One Business/Financial Manager referred to as the "QPR effect" (or Quarterly Performance Review):

> Things happen just prior to the QPR.... Correspondence is responded to.... Performance improves.... Physical actions take place.... Modules get moved.... Problems get resolved.... The QPR effect results in action.

E. FEE COMPUTATION FORMULAS

How should the award fee be computed? Three different methods were utilized in the various contracts reviewed and will be discussed in this section.

The first method is similar to that which is recommended in the FAR (see Appendix C for review). This method calls for each evaluation category to be multiplied by the appropriate rating percentage. This earned percentage for each category is then totaled. This factor is again multiplied by the amount available in the award fee pool to determine the earned award fee amount for that evaluation period. In the researcher's opinion, the one weakness in this method is that the contractor is rewarded for unsatisfactory performance through the award of some amount of fee, although the award fee may be small in amount.

The second method observed in one Program Office is quite complicated and involves numerous mathematical derivations. Prior to discussing the formula for the award fee determination, some definitions and supporting formulas must be clarified:

1. The Quarterly Award Fee Pool (QAFP) consists of the summation of a Primary Award Fee Pool (PAFP) and a Reallocated Award Fee Pool (RAFP).

2. The PAFP available during any evaluation period shall be derived by determining the progress made by the contractor during the evaluation period. The progress shall be determined by dividing the cumulative Budgeted Cost of Work Performed (BCWP)[6] to date by the total Budgeted Cost at Completion (BCC)[7] including Reserves, as they appear on the Cost Performance Report (CPR). This percentage will then be applied to the contract Total Award Fee Pool (TAFP). The TAFP is defined as the sum of the base fee and award fee. From this total will be subtracted the sum of the PAFP pools that were available through the previous evaluation period to determine the PAFP available for the period being evaluated.

3. RAFP: Of the unawarded QAFP during any period, forty percent will be reallocated to the remaining portion of the contract. Each quarter a portion of this

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[6]Budgeted Cost of Work Performed (BCWP) is defined as the budget applicable to the work actually accomplished. BCWP is determined by adding up the budgets of those work packages which have been completed along with an estimated amount of budget for the completed work in open work packages.

[7]Budgeted Cost at Completion (BCC) can be defined as the budget applicable to the work scheduled to be accomplished within a given time frame. BCC is determined by adding up the budgets applicable to work packages scheduled to be accomplished.

amount less the sum of all RAFPs from previous quarters will be allocated based on the progress made during the quarter compared to work remaining in the contract.

When the QAFP and PAFP have been computed, the award fee to be paid to the contractor for any period can be computed by multiplying the QAFP by a factor (Fn) and subtracting 0.20 of the PAFP. The Fn is set by the FDO based on the evaluation of the contractor's performance by the PEB. In no case will the award fee be less than zero.

The above example of award fee determination was extracted from a contract with a three percent base fee and a forty percent roll over provision for unearned award fee. The subtraction of 0.20 of the PAFP in the above paragraph was meant to offset the effects of the base fee. The same effect could have been achieved by reducing the size of the base fee to something between zero and one percent. In the researcher's opinion, the weakness in the above approach is that it is cumbersome and time consuming; all the records and formula computations were maintained by hand on a single data sheet. In addition, the process could also be confusing to both the contractor and Government representatives, raising questions in some individual's minds.

The third, and most popular, method observed for determining the amount of award fee used a basic formula which the researcher has modified into a generic mathematical formula. This formula can be expressed as:

$$(\text{Rating} - A) / B \times 100 = \text{Award Fee Percentage} \qquad (4.1)$$

In equation 4.1 the "A" represents that maximum threshold which is considered to be unsatisfactory performance; whether it be 20, 30, or 40 percent. The "B" is simply 100 minus "A" so that if "A" were 20 percent, "B" would equal 80 percent.

It is easy to understand why this last method is the most popular. It is relatively easy to understand, leaves little room for confusion, and does not award the contractor for unsatisfactory performance. If a performance rating of 30 percent or below were deemed unsatisfactory, the contractor would simply not be entitled to any award fee for a rating of 30 percent or below.

F. CONCLUSION

This chapter examined pre-award activities and the development and structuring of contract elements which influence the award fee determination process. In examining the determination of the base fee, it was discovered that when originally conceived, the base fee was intended only to cover the contractor's unallowable costs. Unallowable costs are normally covered by the standard profit or fee the contractor earns. Therefore, any base fee which is above zero should be the exception rather than the rule and should be used only for those situations where the Government and the contractor are so concerned with, and anticipate that the contractor may perform so poorly that the contractor will earn only the base fee.

Funds which remain in the award fee pool, after the award fee determination is made, can be handled in one of two ways. These funds can either be "lost" as far as the contractor is concerned, or a percentage of that award fee which was not earned by the contractor can be rolled forward to subsequent periods. Advantages and disadvantages of each option were examined.

The development of the evaluation criteria cannot be accomplished in a vacuum. An evaluation of the contractor's strengths and weaknesses must be completed, with the weaknesses highlighted in the evaluation criteria. The four criteria recommended by the researcher were technical/management performance, schedule performance, cost performance, and logistics supportability. Major considerations in developing the evaluation criteria were also reviewed and examined.

In discussing the length of the evaluation period, four elements where identified which must be examined prior to determining how long the evaluation period should be. These four elements are projected length of the contract, contract complexity, size of the contract, and administrative requirements. The majority of those interviewed favor the three month, or quarterly, evaluation period.

Finally, three methods were identified with which the award fee could be computed. The third method, represented in equation 4.1, is recommended by the researcher.

The next chapter examines those functions involved with administering CPAF contracts and activities which impact on the award fee determination process. The chapter will conclude with a section dedicated to data/trend analysis of award fees in those CPAF contracts reviewed.

V. ISSUES IN ADMINISTERING COST-PLUS-AWARD-FEE CONTRACTS

A. INTRODUCTION

Now that the pre-award contract award fee considerations have been reviewed, it is appropriate to discuss those post-award (or contract administration) functions and activities which impact on the award fee determination process. These functions include the Performance Evaluation Board composition and proceedings and the authority of the Fee Determination Official. The chapter will conclude with a section dedicated to data/trend analysis of award fees in those CPAF contracts reviewed.

B. PERFORMANCE EVALUATION BOARD COMPOSITION AND PROCEEDINGS

It is first appropriate to discuss the Performance Evaluation Board's (PEB) composition prior to discussing the proceedings of the board. Who sits in on the board's proceedings? Who should be represented on the board? These and other questions will be addressed in the next few paragraphs.

1. Composition

Naval Material Command guidance on the composition of the PEB is clear [Ref. 91].

> Award fee contracts shall include a provision for an Award Fee Board (AFB) whose primary function will be to recommend to the FDO an award fee for each award fee performance period. The recommendation will be stated in terms of a percentage to be applied to the award pool for the period being evaluated. Members of the AFB shall be designated by functional job title and shall include representatives of various disciplines having significant association with the work being performed, i.e., Engineering, Quality Assurance, Finance, Production, Contracting, Test and Trials, etc. Up to 25% of the AFB may be comprised of personnel who are not associated with the contract effort involved. The FDO may be a member of the board, in which instance the FDO will be the chairperson.

It is interesting to note that while the NAVMAT guidance authorizes up to 25 percent of the PEB to be composed of personnel who are not associated with the contract effort, it does not require the PEB to have Government representation from the contractor's on-site office. In one contract reviewed, the PEB was composed of:

1. The Contracting Officer or his appointed Government representative;
2. Six technical representatives from the Naval Air Systems Command;
3. Three representatives of the Program Office;

4. Two technical representatives of the Naval Sea Systems Command; and

5. One representative of the Naval Electronics Systems Command.

The researcher finds it difficult to understand how the FDO can receive a fair and equitable evaluation from the PEB without having on-site representation! With the exception of one of the eighteen contracts reviewed, all the other contracts had on-site representation on the PEB, and all personnel interviewed, with the one exception, agreed that PEB on-site representation is critical to the success of the program. A representative of the one contract which did not have on-site representation cited "Program Manager's judgement" as the reason for the lack of well-balanced representation. As one Business/Financial Manager indicated, "on-site representation reduces needless criticism and problems for the PEB." While nearly everyone agreed that on-site representation was necessary, it was not clear as to the positions and backgrounds these representatives should have. Some advocated that it was only necessary to have the head of the on-site office as a member of the PEB; while others advocated more balanced representation in terms of specialty areas (Quality Control, Production, Finance, etc.).

Generally, all members of the PEB are professionally competent senior Government managers. One contract went so far as to specify the composition of the PEB by subdividing the board into voting and non-voting members. The seven voting members consisted of the Program Manager, Administrative Contracting Officer, a customer representative and members from both the Systems Command and on-site office. Non-voting members were to be assigned by the Chairperson (Program Manager) of the PEB to assist in the proceedings and could consist of:

1. An evaluation coordinator who handles all administrative actions for the PEB meeting to include: setting up the meeting, assembling category representative reports and other pertinent information for board members, serving as the point of contact with the contractor and preparing a draft performance evaluation letter to the FDO for the PEB.
2. The recorder who prepares minutes of the PEB meetings.
3. Category representatives who analyze monitor reports and present findings to the PEB.
4. Legal counsel (if desired by the Chairperson).

The researcher can see advantages (and no real disadvantages) to including non-voting members on the PEB. It would certainly expedite the proceedings and provide clarification where needed without having to adjourn the meeting.

2. Proceedings

Naval Material Command guidance on the PEB proceedings are somewhat general [Ref. 92].

> (1) The PEB shall meet as reasonably close to the end of an award fee period as possible. Timely determination of award fees is one of the upmost importance in making the award process work. The board shall receive reports, both oral and written, as considered necessary, from all interested parties. A report will be presented by the contractor. The PEB is encouraged (emphasis added) to invite contractors to be present during the presentation of these reports.
>
> (2) At the conclusion of the PEB meeting, the board shall, in closed session, derive a final overall score by category, i.e., technical, management, cost, etc., and report its recommendation including formal written rationale for the score to the FDO.

Most PEB proceedings reviewed followed basically the same format. A typical sequence of events for the conduct of a PEB meeting would be as follows: [Ref. 93]

1. Pertinent information for each voting member should be assembled. This information should include:
   a) Representative and monitor reports;
   b) A summary of the impact of scoring on fee determination. This should include a breakdown of data by rating, award fee percentage, and corresponding dollar value for the award fee.

c) A copy of previous period PEB recommendation letters.

d) A copy of the performance ratings and criteria.

e) A list of key milestone events for the period.

2. The contractor is normally invited to attend the first and second segments of the PEB meeting. Attendance is generally limited to a few key management personnel. Documentation used by the board is not, nor should it be, made available to the contractor.

3. The first segment of the PEB meeting, for participation of contractor personnel, normally consists of a presentation by the contractor, if desired, followed by questions presented to the contractor resulting from board members review of Government and contractor input. All representatives' presentations for each category the contractor wishes to address should precede questions to the contractor. It is at this point that the contractor's active participation in the PEB should be completed.

4. The second segment of the PEB meeting generally consists of a discussion led by predesignated Government representatives as category leaders of the pertinent points. This segment may be attended by a top contractor management representative, usually

above the program supervisory level, but should not include further input by the contractor. The discussion usually begins with a summarization by the category leader with a recommended score, followed by comments from other board members. The contractor representative who is present during this segment assumes a passive role.

5. The third segment of the PEB meeting generally consists of determining performance ratings for each score and finalizing a recommendation letter which supports the ratings. The contractor is not to be present during this segment. Any discussion of performance should be to justify a recommended score, but should not present any new information. Previous period letters are to be reviewed so that members are aware of previous ratings given in order to be able to highlight improved areas or continued problem areas in making the evaluation of performance.

6. Each category leader then summarizes the facts from preformance ratings established during negotiations and presents an adjective rating.

7. The scoring procedure is either by member negotiation (majority opinion) or averaging. Neither method is recommended over the other; however, consistency from one period to the next should be maintained. The

system chosen for use should be a part of the implementation plan. In accordance with a pre-established scoring sheet, the final rating is the weighted average of the category scores. The PEB generally remains in session until a final letter is agreed upon by the voting members of the board for the FDO.

One Project Manager has developed a set of unwritten rules for the conduct of the PEB proceedings. These rules are applicable to any PEB evaluation process and should be observed:

1. Board members do not intimidate witnesses;
2. Board members do not reveal to one witness what another witness said;
3. Witnesses do not discuss their testimony with anyone else, including other witnesses;
4. Witnesses testimony must be limited to the evaluation period with no reference to the events outside the period.

All PEB members interviewed indicated that, although not formalized, there was general agreement that the above guidelines were followed in most instances.

The above sequence of events discussed for the PEB proceedings were common to all contracts reviewed, with one exception. The one difference of opinion centered around step two. Some Project Managers and Business/Financial

Managers felt strongly about <u>not</u> having a contractor representative present during presentations by the Government witnesses. It was felt that contractor representation would tend to intimidate the witnesses. Others indicated that this was not a concern. The researcher does not take a position favoring either side of the issue. On the one hand, intimidation of the witness may be a possibility. However, if the witnesses are professionally competent, senior managers within the Government's on-site office and know that they have the support and backing of their supervisor who expects them to be honest and present a true picture of a contractor's performance, intimidation should not be of concern. In addition, having the contractor representatives present during the testimony allows senior contractor management to receive feedback "straight from the horse's mouth". This represents just one more opportunity to open and strengthen the line of communication between the Government and the contractor. The decision whether to allow contractor representatives to be present during Government witness testimony should remain with the discretion and better business judgement of the Project Manager.

One concern common throughout all PEB members interviewed was that the testimony from Government witnesses during the presentations and discussions too often did not agree with or support the grade recommended. Witnesses are generally mid-grade Government employees who work with the contractor on a daily basis. One of two situations generally existed. The first is that the grades recommended were often too low compared to the written input to the board. For example, a recommended grade of 70 percent would be accompanied by a description that indicates "performance is <u>outstanding</u> in most respects, with a few areas of major and minor deficiencies". The second situation encountered is just the opposite, where a recommended high grade is supported with a relatively weak narrative description.

The obvious solution to the problem described in the above paragraph is a formalized training and education process for those who provide testimony to the PEB. Witnesses must realize the impact their testimony has on the PEB's proceedings and the eventual determination of award fees. This training should include how to write evaluations which support the recommended grade.

C. AUTHORITY OF THE FEE DETERMINATION OFFICIAL

An examination of the last key element in the evaluation of the fee determination process is appropriate; that is, an examination of the role and authority vested in the Fee Determination Official (FDO).

1. Role of the Fee Determination Official

The FDO is the single most important individual in the fee determination process. In all contracts examined, the FDO was the Project Manager. In the arena of major weapon systems acquisition, it is logical for the Project Manager to assume the role of the FDO. This function provides the Project Manager an additional opportunity to "stay on top of the project" and be effective as the manager of the project. Every person interviewed indicated that an effective Project Manager would want to assume this function.

As discussed earlier in this chapter, the FDO may or may not be a member of the PEB. If the FDO is a member of the PEB, then the FDO will assume the additional responsibilities of PEB Chairperson.

2. Authority of the Fee Determination Official

The Naval Material Command vests the following authority in the FDO: [Ref. 94].

> The FDO shall, based on the recommendation of the PEB and any other pertinent information known, determine (emphasis added by the researcher) the award fee for the period in question.

The final award fee determination rests with the FDO, and <u>only</u> with the FDO.

The findings of the PEB are only recommendations to the FDO. The FDO is not bound to follow the recommendations of the PEB, and may in fact modify the amount of the award fee based on "other pertinent information". How often does the FDO disagree with the recommendations and input from the PEB? In analyzing interviews conducted, the answer to this question really depends on whether or not the FDO plays an active role in the PEB. If the FDO is a member of the PEB, all of the concerns of each member, including the FDO, are expressed prior to the determination of a grade. If the FDO disagrees with a determination, at least the FDO sat in on the PEB proceedings and is familiar with the logic behind the decision. In all cases involved in this study where the FDO was also a member of the PEB, the FDO accepted the recommendations of the PEB and never modified the recommended score.

In cases where the FDO did not sit in as a member of the PEB, cases of both agreement with the PEB recommendations and disagreement were found. In one contract reviewed where the FDO was not a member of the PEB, the FDO always accepted the PEB's recommendations and never modified the amount of the award fee. Those individuals associated with this program insisted that the FDO's findings were not a "rubber stamp," that the findings were complete and extensive covering all concerns and questions of the FDO. In this case, the PEB Chairperson was also the Deputy Program Manager. As indicated by the Business/Financial Manager, the "Program Manager's concerns are also the Deputy Program Manager's concerns. We all have to live and work together."

In those cases where the FDO did not sit in as a member of the PEB and disagreed with the recommendations provided, the FDO would frequently modify the amount of the award fee. In no case observed did this modification result in a lower award fee being awarded to the contractor, and most modifications were modest (1 to 2 percent) increases. The reasons given for these modifications were in all cases "valid reclamas" from the contractor.

a. Potential for Abuse

It is interesting to note that the NAVMAT guidance requires the PEB to report its "recommendation <u>including formal written rationale</u> for the score to the FDO" [Ref. 17]. If the FDO does not agree with the recommendations of the PEB and modifies the award fee, no guidance available requires the FDO to document the rationale for this decision. In one contract examined, the PEB recommended the following ratings for the evaluation factors indicated:

1. Technical: Satisfactory
2. Schedule: Marginal
3. Design to Cost: Satisfactory
4. Cost Control: Marginal
5. Management: Marginal

These ratings reflect the following definitions:

1. Satisfactory Performance: Represents 56 to 75 percent of the potential award fee. The contractor has demonstrated an overall level of performance which meets the contract requirements.
2. Marginal Performance: Represents 26 to 55 percent of the potential award fee. The contractor has demonstrated an overall level of performance which is below the contract requirements.

Without "apparent" justification, the FDO (who was also the Project Manager) modified the PEB recommended grades to the following:

1. Technical: Satisfactory
2. Schedule: Satisfactory
3. Design to Cost: Good
4. Cost Control: Satisfactory
5. Management: Satisfactory

A "Good" grade represented 76 to 85 percent of the potential award fee and the contractor demonstrated an overall level of performance which is slightly higher than contract requirements.

While there may be sufficient justification for the modifications, this information was not available either in the contract file or from those in the Program Office. The FDO has retired and was not available for questioning. Nevertheless, four of five grades were increased without apparent documentation.

D. DATA/TREND ANALYSIS OF AWARD FEES

Data from eighteen CPAF contracts, representing four different Project Offices, were obtained for review and analysis. These eighteen contracts had 117 individual evaluation periods. The approximate total cost estimate for these eighteen contracts exceeded approximately $2.271 billion. As a condition of making the data available, the researcher agreed to sanitize the data so that it would not be possible to identify any particular data set to the associated contract or Program Office. These data, tabulated in raw form, are presented in Appendix E.

The data were examined in three ways; by individual contract, by Program Office, and finally, by combining all data from every contract into a single data set. Each of these three combinations will be discussed in the following sections.

1. Data From Individual Contracts

The evaluation period for each of the eighteen contracts was three months in duration. Statistical data were extracted from the raw data found in Appendix E for each contract and are presented in Table 4 These data included the minimum score awarded as a percentage of the amount of funds available in the award fee pool, the maximum score awarded as a percentage of the amount of funds available in the award fee pool, the statistical mean, the standard deviation, and the median of the amount of the award fee earned by the contractor. In addition, a correlation was derived between the "age" of the contract and the award fee earned. As the contractor's performance progressed and gained experience, was the contractor's behavior modified in response to the evaluation criteria and feedback provided by the FDO? If this was the case, one would expect it to be reflected by a strong positive correlation. On the other hand, if the contractor's performance did not improve, this may be reflected by a lower award fee as the contract progresses and would represent a negative correlation. The statistical data presented in Table 4 have been tabulated by contract corresponding to the same contract number found in Appendix E.

TABLE 4

Statistical Data for Individual Contracts

CONTRACT NUMBER	MINIMUM SCORE	MAXIMUM SCORE	MEAN SCORE	STANDARD DEVIATION	MEDIAN SCORE	CORR.
1	.859	.950	.931	.035	.944	.709
2	.750	1.000	.871	.072	.860	.758
3	.840	.950	.907	.029	.910	-.399
4	.950	.980	.965	.013	.970	.910
5	.870	.920	.899	.016	.900	-.298
6	.880	.910	.895	.014	.895	-.412
7	.475	.890	.686	.121	.667	.418
8	.629	.941	.813	.124	.831	.967
9	.294	.434	.387	.081	.434	-.866
10	.636	.777	.709	.070	.714	.998
11	.700	.843	.768	.072	.762	.997
12	.893	.970	.936	.039	.946	.977
13	.740	.871	.805	.065	.805	-.504
14	.784	.871	.832	.044	.843	.315
15	.766	.857	.797	.051	.769	-.880
16	.877	.981	.919	.054	.900	.952
17	.797	.869	.828	.036	.820	.979
18	.586	.843	.735	.124	.755	-.765

As can be seen from Table 4, generalized statements cannot be arrived at concerning individual CPAF contracts. The minimum scores range from 29.4 percent to a high of 95 percent, while the maximum scores run from a low of 43.4 percent to a perfect score of 100 percent. It is not intended to select a particular contract for comment; however it should be noted that a score of 100 percent implies that the contractor did <u>everything</u> right! While certainly not impossible, a score of 100 percent raises questions about the quality of the evaluation criteria and almost mandates a close examination of the criteria. The evaluation criteria which result in a perfect score implies that only the contractor's strengths were targeted in the evaluation criteria, and perhaps other areas of potential weaknesses should be examined for evaluation criteria in subsequent CPAF contracts with the contractor in order to provide proper motivation. In the particular case where a contractor earned a perfect score, this 100 percent grade did appear toward the end of contract performance. Figure 5.1 shows that as the contractor gained experience and continued to be motivated to achieve higher scores, the scores did in fact increase over time, culminating in a perfect score at the end of contract performance. This is one example of how the "carrot and stick" approach to motivating behavior is utilized.

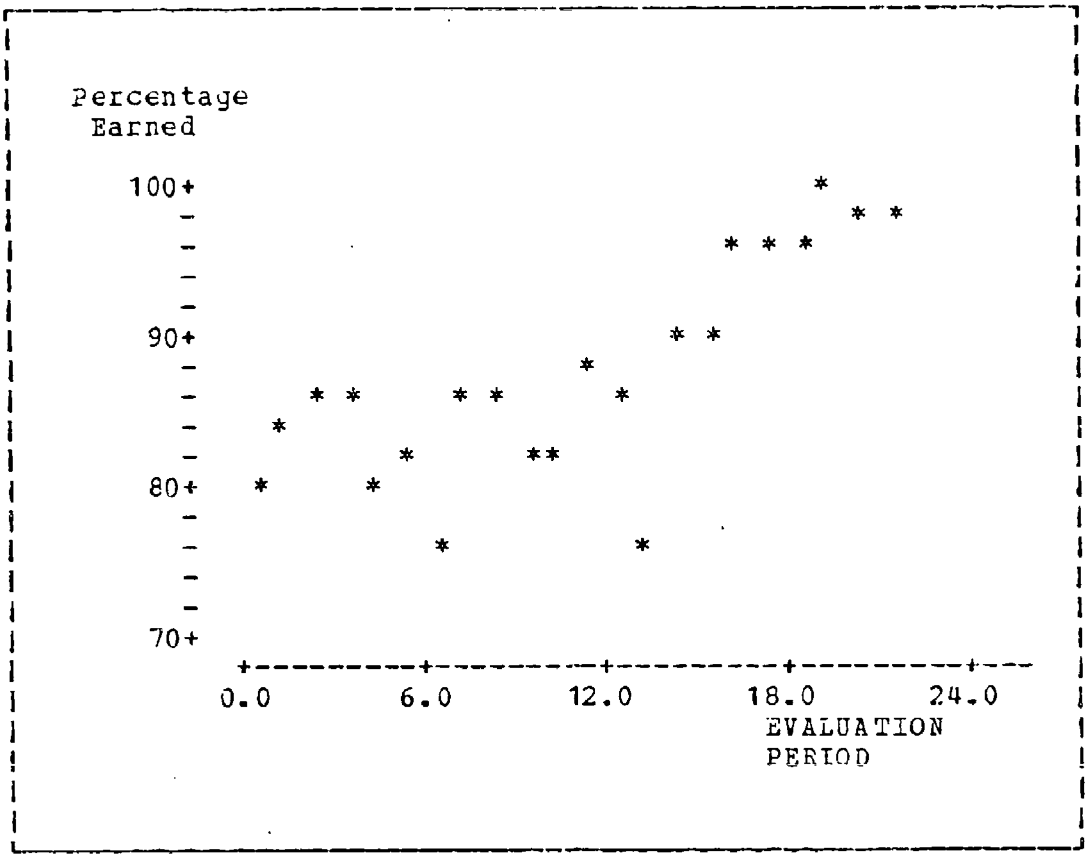

Figure 5.1 Progression of Award Fees.

The mean scores ranged from a low of 33.7 percent to a high of 96.5 percent, while the standard deviations ranged from a low of 1.3 percent to a high of 12.4 percent. The correlations ranged from a strong positive correlation of 99.8 percent to a strong negative correlation of -88.0 percent. Figure 5.2 shows graphically a positive correlation between time and the amount of award fee earned. As

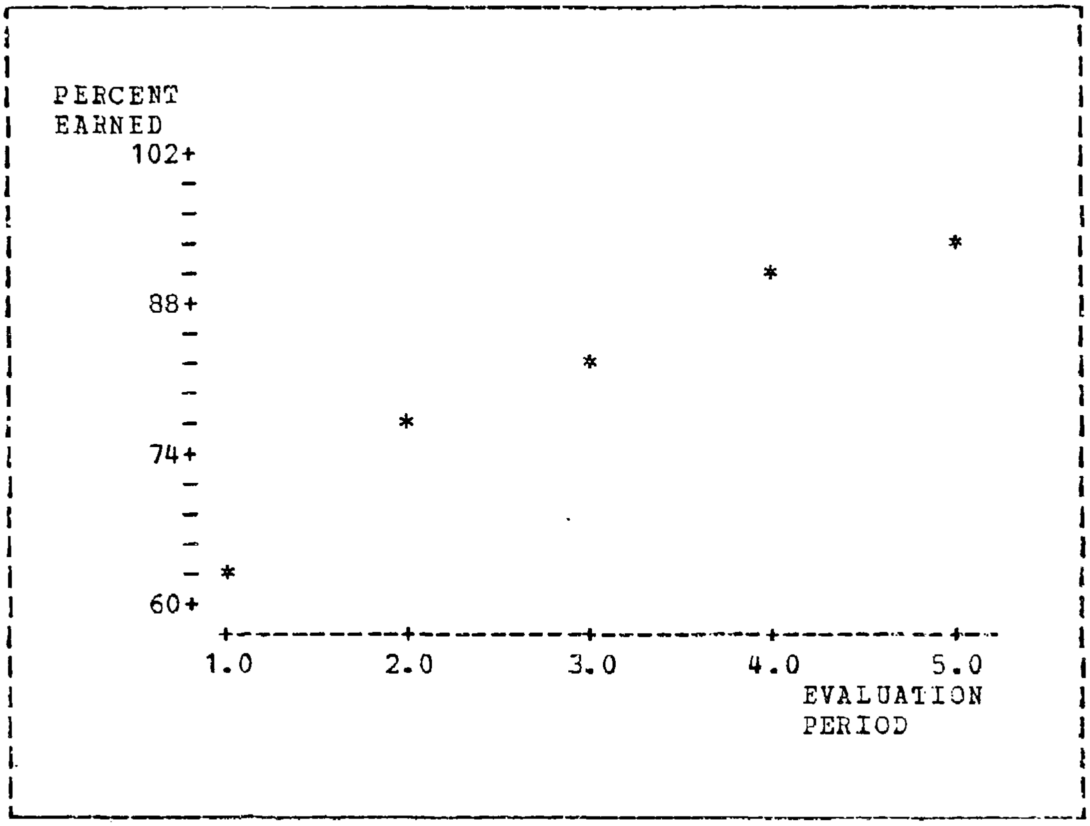

Figure 5.2 Award Fee Data With Positive Correlation.

the contractor progresses through performance, gains experience, and remains motivated to improve, this is reflected in higher award fees. On the other hand, Figure 5.3 demonstrates a situation with a negative correlation between time and the amount of award fee earned. As the contractor progresses through time and does not remain motivated, resulting in deteriorating performance, lower award fees over time are appropriate.

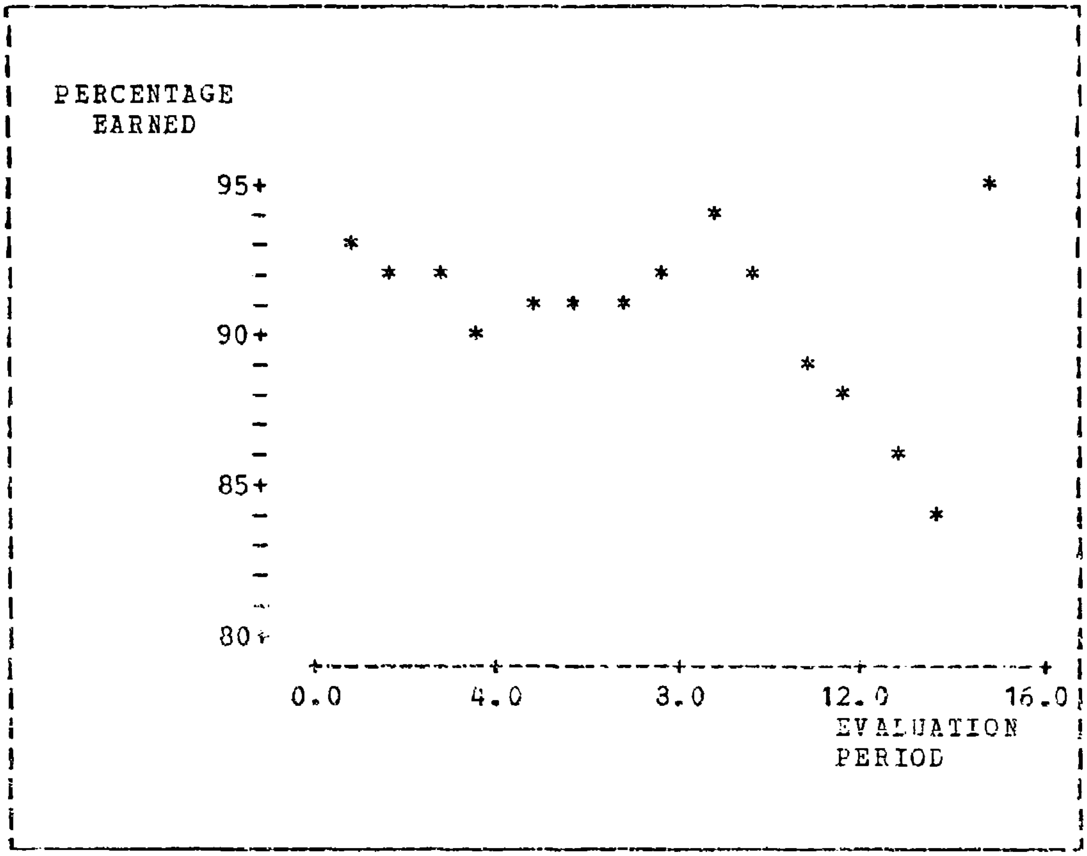

Figure 5.3 Award Fee Data With Negative Correlation.

2. Program Office Data

Data for the eighteen individual contracts found in Appendix E were combined into their respective four Program Offices. Statistical data were then extracted by the researcher by Program Office and follows Table 4 format. Table 5 presents these data.

Program Office number four is represented by ten contracts, Program Office number one by six contracts, and Program Offices two and three by only one contract each. It is interesting to examine the histograms from Program Offices one and four. These histograms are presented in Figures 5.4 and 5.5 and represent the amount of award fee earned expressed as a percentage of the amount of fee available in the pool. Histograms from Program Offices two and three are not provided because of the relatively small

MIDDLE OF INTERVAL	NUMBER OF OBSERVATIONS	
0.74	0	
0.76	2	**
0.78	0	
0.80	2	**
0.82	3	***
0.84	2	**
0.86	7	*******
0.88	7	*******
0.90	10	**********
0.92	14	**************
0.94	6	******
0.96	8	********
0.98	6	******
1.00	1	*

Figure 5.4 Program Office Number One Histogram.

MIDDLE OF INTERVAL	NUMBER OF OBSERVATIONS	
0.3	1	*
0.4	2	**
0.5	0	
0.6	2	**
0.7	4	****
0.8	12	************
0.9	8	********
1.0	2	**

Figure 5.5 Program Office Number Four Histogram.

number of total evaluation periods available in the two contracts involved; no significant trends are evident. The reader may obtain this information, if so desired, by reviewing Tables 13 and 14 in Appendix E. In examining Table 5, the researcher could detect no significant data or trends. Data in Program Office's two and three must be discounted because they represent single contracts rather than combined contracts as in Program Offices one and four. When examining the contract data in Program Offices one and four, there is no significant correlation between the "age" of the contract and the amount of award fee earned by the contractor.

TABLE 5

Statistical Data for Program Offices

Program Office	Minimum Score	Maximum Score	Mean Score	Standard Deviation	Median Score	Correl.
1	.750	1.000	.900	.053	.910	.110
2	.475	.890	.686	.120	.667	.418
3	.629	.941	.818	.124	.831	.967
4	.294	.981	.771	.157	.805	-.040

It cannot be concluded from these two Program Offices that as the contractor's performance progresses, there is a positive motivational impact on the contractor which would be reflected in higher award fees earned (with a strong positive correlation between time and award fee earned). One possible conclusion is that there is little or no positive correlation between time and the amount of award fee earned for any single contractor within individual Program Offices; indeed, Program Office four shows a negative correlation.

An examination of Figures 5.4 and 5.5 show that the two Program Offices tend to skew the amount of award fee earned, expressed as a percentage of award fee available in the pool, to the high side of the scale, i.e., 80 percent and above. This is particularly evident in Figure 5.5 and, as will be seen later, this is also true throughout all Program Offices.

3. Combined Contract Data

Data found in Appendix E were combined into one single data set from which statistical data could be extracted. These data are presented in Table 6 The histogram for this data set is presented in Figure 5.6 and represents the amount of award fee earned expressed as a percentage of the amount of fee available in the pool.

TABLE 6

Statistical Data From All Contracts Combined

Minimum Score	Maximum Score	Mean Score	Standard Deviation	Median Score	Correl.
.294	1.000	.839	.127	.877	.247

As can be seen from Table 6, there exists a slight correlation (24.7 percent) between the "age" of the contract and amount of award fee earned. The general tendency appears to be to increase the amount of the award fee earned as contractor performance progresses. As seen earlier, this generalization cannot and should not be applied to individual contracts or individual Program Offices.

The histogram shown in Figure 5.6 shows a definite skewing of the award fees to the high side (i.e., 80 percent and above) for all contracts combined. It is logical to assume that in most cases these high awards are the direct result of a skewing to the high side of recommended grades to the FDO from the PEB (assuming that the FDO does not

MIDDLE OF INTERVAL	NUMBER OF OBSERVATIONS	
0.30	1	*
0.35	0	
0.40	0	
0.45	2	**
0.50	2	**
0.55	0	
0.60	1	*
0.65	8	********
0.70	3	***
0.75	8	********
0.80	12	************
0.85	21	*********************
0.90	34	**********************************
0.95	20	********************
1.00	5	*****

Figure 5.6 Histogram for Combined Contract Data.

unilaterally increase the award fee with or without proper justification). There appears to be a general tendency to award high grades.

The question then becomes "What is a high grade?" Twelve of the eighteen contracts reviewed had a three percent base fee and a twelve percent award fee. An "average" grade has not been defined. However, if an average grade were defined as 50 percent, then an average

$$3\% \text{ Base Fee} + .50(12\% \text{ Award Fee}) = 9\% \qquad (5.1)$$

total fee would be as shown in equation 5.1 If "average" performance were to equate to an 80 percent award fee (as it appears to be the case with award fees skewed to the high side), then an average total fee would jump to 12.6 percent,

$$3\% \text{ Base Fee} + .80(12\% \text{ Award Fee}) = 12.6\% \qquad (5.2)$$

equation 5.2 shows this. With a 90 percent "average" score, the total fee earned would be 13.8 percent. Equation 5.3 demonstrates this.

This skewing of award fees to the high side can create problems for the Contracting Officer at a later date

$$3\% \text{ Base Fee} + .90(12\% \text{ Award Fee}) = 13.8\% \qquad (5.3)$$

during subsequent contract negotiations. As a particular project matures, the type of contract is more than likely to migrate from a cost-reimbursement type of contract to a fixed-price type of contract. As this occurs and the contractor assumes a greater share of the risk, the contractor should expect to be compensated for the greater assumption of risk through higher profit (or fee). If the contractor has been earning 12 to 14 percent on a CPAF contract, it may be impossible to get the contractor to agree on a profit rate of 10 or 11 percent on subsequent fixed-price contracts. Although the researcher does not propose that 10 to 11 percent should be the standard profit on a fixed-price type of contract, some interviewees indicated that there does seem to be a "10 percent mentality" when discussing fixed-price profit rates. As shown in equation 5.1, an average grade of 50 percent would result in a 9 percent total fee, making it easier to transition to a fixed price type of contract with a profit rate of 10 to 11 percent.

Although weighted guidelines do not apply to CPAF contracts, [Ref. 86] a brief examination of the weighted guidelines was conducted to determine the impact on the fee _if_ weighted guidelines did apply. The percentage range for fee objectives for a CPAF contract was selected by the researcher as 1.5 to 3 percent, to reflect assumption of cost risk for a cost reimbursement type contract with a "relatively" high degree of risk, and 4 to 6 percent for a FPIF contract with multiple incentives. If all weighted guideline elements, with the exception of contract cost risk, are held constant, then the difference in fee/profit can be attributed to only the assumption of cost risk. Using a measurement base of $100,000 for simplicity, the CPAF contract fee would be between $1,500 and $3,000, and the FPIF profit would be between $4,000 and $6,000. Notice that in all cases, the CPAF fee would be below the FPIF profit objective. When the project then migrates from a CPAF contract to a fixed-price type of contract, the contractor would then realize an increase in profit/fee. In reality, this is not the case when the CPAF fee is between 12 to 14 percent and the Government attempts to negotiate a profit objective of 10 to 11 percent on a fixed-price type of contract.

It appears logical to conclude then that the general tendency is to award grades which are too high. As shown in Table 6, the mean (or average) award fee was nearly 84 percent, with a median award fee earned of nearly 88 percent.

E. CONCLUSION

Proper administration of CPAF contracts is critical to the success of the award fee concept. For CPAF contracts to succeed, the concept of a post-performance subjective evaluation by the Government must have the support of the contractor. For this to occur, the contractor must feel that a fair and equitable evaluation is being conducted. Because of this, the PEB must have representation from the on-site office as a member of the Board.

This idea of a fair and equitable evaluation is also a two-edged sword. The evaluation must also be fair and equitable to the Government. As pointed out earlier, the potential exists for the FDO to abuse his authority. In the one instance cited earlier, the FDO appears to have abused his position by raising the recommended grades of the PEB without documented justification. The reverse is also possible; the FDO could also lower the recommended grades. In either case, controls over these possibilities are needed. Such controls should include the FDO justifying his actions in writing and filing this documentation for future reference.

VI. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

The following conclusions apply to this research effort:

1. Improvements to the award fee determination process are needed. The process needs to be improved for two reasons. First, as discussed in Chapter IV, section B, CPAF contracts are being criticized as "give away" programs, particularly when roll over provisions are used which are considered "gifts to the contractor" and allow the contractor "multiple bites at the apple." The second reason the award fee determination process needs to be improved is that CPAF contracts do not have the full support of those who currently set policy. As discussed in Chapter II, section E, and in Chapter IV, section B, this lack of support, or confidence, is reflected in increased restrictions on the use of CPAF contracts. Specifically, these increased restrictions include a threshold of $25 million on the use of CPAF contracts, and that use of carry forward provisions for unearned award fees are expressly prohibited without prior approval from Chief of Naval Material.

2. <u>The base fee is generally too high</u>. As discussed in Chapter IV, section A, the majority of Government personnel interviewed indicated that the base fee should be three percent. However, these individuals seem to have lost sight of the basics and could not logically support a three percent base fee, other than "it's authorized in the FAR" or "it appears to be the standard." As Dr. Meiners indicated, "the base fee, when originally conceived, was intended only to cover the contractor's unallowable costs, which historically have been two percent." This naturally assumes that there is a potential for the contractor to earn none of the fee available in the award fee pool. Dr. Meiners also indicated that "there is no other type of contract where funds are set aside specifically to cover unallowable expenses." These expenses are normally covered by the standard profit or fee the contractor earns. The use of a base fee should only be for those situations where the Government and the contractor are so concerned with and anticipate a large number of uncertainties that the contractor will earn only the base fee. This would certainly be the exception rather than the rule.

3. The current restrictions on the use of roll over provisions should be eased. As discussed in Chapter IV, section ~ circumstances may exist which favor use of roll over provisions. Use of roll over provisions should be an option to provide management flexibility to the Program Manager.

4. Performance ratings and performance evaluation criteria are too subjective. As seen in Chapter IV, section C, the most commonly used performance rating is the adjective-type standard rating system which indexes a performance quality adjective and corresponding explanation to a percentage of the potential award fee available during the evaluation period. Similarly, evaluation criteria tends to be too broad and not well-defined. This leads to confusion and exposes the award fee determination process to criticism.

5. The following four criteria must first be examined in determining the length of the evaluation period: Projected length of the contract, contract complexity, size of the contract, and administrative requirements. As discussed in Chapter IV, section D, there is no cookbook solution to determining the length of the evaluation period. Such a decision, however, should not be made if any of the above four

elements are not first considered in the decision-making process.

6. Award fee computation formulas have the potential of awarding the contractor for unsatisfactory performance and can be difficult to understand. As seen in Chapter IV, section E, the criteria in selecting a formula are that it should be relatively easy to understand, leaves little room for confusion, is not subject to interpretation, and does not reward the contractor for unsatisfactory performance.

7. A fair and objective evaluation of the contractor requires that the Performance Evaluation Board have on-site field office representation. As seen in Chapter V, section B, on-site representation reduces needless criticism and problems for the PEB. One contract reviewed lacked on-site representation on the PEB, and was the subject of severe criticism for not being well-balanced.

8. The potential exists for the Fee Determination Official to modify award fee recommendations without apparent justification. As seen in Chapter V, section C, in one contract examined the FDO unilaterally raised four of five recommended grades without apparent justification. Although the exception rather than the rule, the FDO has the authority to

unilaterally adjust recommended grades from the PEB. While there may be sufficient justification for the modifications, this information was not available either in the contract file or from those in the Program Office.

9. Development of a training program for CPAF contracts which can be exported to various commands is needed. As discussed in Chapter II, section F, one of the disadvantages of CPAF contracts is the complexity inherent in administering the contract. A formalized training program for CPAF contracts currently does not exist.

10. Award fees provided under CPAF contracts have a tendency to be too high. As discussed in Chapter V, section D, the average award fee is nearly 84 percent and the median award fee is nearly 88 percent. In a contract with a three percent base fee and a twelve percent award fee, the total fee earned by the contractor (given a recommended award fee of 84 percent) is over thirteen percent. This creates serious problems when the program migrates from a cost-reimbursement type of contract to a fixed-price type of contract.

B. RECOMMENDATIONS

The following recommendations are appropriate for this study:

1. <u>That the base fee be zero, as a general rule, unless strong evidence exists which supports the use of a base fee between zero and three percent</u>. This recommendation would accomplish two things. First, it would result in the total fee earned by the contractor to be lower. For example, if the award fee pool were 12 percent with a base fee of three percent, total fee earned by the contractor would be 12.6 percent with an award fee grade of 80 percent. However, if the base fee were zero, and the award fee pool were 15 percent, total fee earned with an 80 percent award fee grade would be only 12 percent. This would make it easier to transition from a cost-reimbursement type of contract to a fixed-price type of contract. Secondly, use of a zero base fee would reduce criticism that award fee contracts are "give away" programs. This recommendation is significant because it contradicts "traditional" attitudes toward use of base fees and requires that attitudes be adjusted throughout the acquisition community. This recommendation may be implemented through

promulgation of a policy statement or instruction at the Systems Command level.

2. <u>That the Chief of Naval Material ease the current restrictions on use of roll over provisions for the award fee pool</u>. This recommendation would return management flexibility to the Program Manager. This recommendation is significant because roll over provisions have been, and will continue to be, controversial. Implementation would require a modification to current NAVMAT policy in NAVMAT Instruction 4280.1A.

3. <u>That performance ratings use only numerical descriptors rather than numeric/adjective ratings</u>. This recommendation makes the award fee determination process less subjective, and thus more objective, by creating relativity for the performance rating when compared against a perfect score of 100 percent. This recommendation is also controversial because there are those who favor use of combined numeric and adjective rating systems. This recommendation may also be implemented through promulgation of a policy statement or instruction at the Systems Command level.

4. <u>That guidance be promulgated outlining the desired depth of detail for evaluation criteria</u>. As the

evaluation criteria becomes more detailed, the subjectiveness inherent in the award fee determination process is reduced, thereby eliminating some of the criticism being levied against award fees. This recommendation is significant because the tendency is to promulgate broad, non-specific guidance leaving room for interpretation and adjustments to individual programs. In the researcher's opinion, evaluation criteria is one area where detailed guidance is appropriate, and may be promulgated through a policy statement or instruction at the Systems Command level.

5. <u>That "logistics supportability" be included as a fourth evaluation element</u>. This recommendation would increase the number of evaluation elements most commonly used to four. These elements would be technical/management performance, schedule performance, cost control, and logistics supportability. This recommendation is necessary to give logistics supportability proper recognition and support from management, and can be implemented through a policy statement or instruction at the Systems Command level.

6. <u>That guidance be promulgated "highly recommending" on-site representation on the Performance Evaluation</u>

Board. Although lack of on-site PEB representation occurred in only one contract and may be an isolated incident, this recommendation closes a significant loop-hole in current guidance. This recommendation would help prevent future "apparent lack of fair and objective evaluations" and thus help eliminate a source of award fee criticism. Implementation is possible through a policy statement or instruction at the Systems Command level.

7. That if the Fee Determination Official should opt to modify the scores recommended by the Performance Evaluation Board and/or the award fee, the reasons and logic for this action should be well-documented in writing and retained in the contract file for future reference. The FDO should retain the flexibility to disagree with the PEB and modify the award fees. The responsibility to determine the award fee is inherent in the position of the FDO. However, this recommendation will help limit the potential for abuse of this authority, even if all that it accomplishes is to make the FDO think twice prior to taking such action. This recommendation is significant because action must be taken to eliminate the potential for even "apparent abuses of the FDO's authority." Implementation is possible through a

policy statement or instruction at the Systems Command level.

8. That a training program for CPAF contracts be developed which can be exported to commands using CPAF contracts. Such a program should include contractor motivation factors, evaluation criteria and methods, responsibilities of those who monitor contractor performance and provide input and testimony to the PEB, as well as other factors unique to CPAF contracts. This recommendation fills a void and true need for those who use CPAF contracts in the field, and is significant because no such program currently exists. Ideally, implementation can be achieved through the Chief of Naval Material providing funds for an educational institution to develop and export such a program to the field.

9. That guidance be promulgated which identifies grade structures for "average" performance. As seen earlier, award fees provided under CPAF contracts have a tendency to be too high. FDOs must gain an awareness of the impact high award fees have on the future and make necessary adjustments. This recommendation would result in lower fees earned by the contractor who is "average" where "average" is defined as 50 percent rather than the current 84

percent. This recommendation would also help reduce the criticism that CPAF contracts are "give away" programs. The significance of such a recommendation is apparent. Defense contractors can be expected to react negatively to such an action. However, if the contractor is to be fairly compensated (fair for both the Government and the contractor) for the assumption of risk, the lowering of CPAF total fees is appropriate. Without the promulgation of such guidance, the skewing of award fees to the high side will probably continue and may in fact grow. This will continue to make it difficult to migrate from a cost-reimbursement type of contract to a fixed-price type of contract. Implementation of this recommendation is perhaps best through a policy statement or instruction issued by NAVMAT.

C. ANSWERS TO RESEARCH QUESTIONS

1. What are the key characteristics of the award fee determination process under CPAF contracts for Major Weapon Systems acquisition and how might this process be improved?

Identification of the key characteristics of the award fee determination process is really a two step process. The first step involves an examination of pre-award activities and the development and structuring of contract elements which influence the award fee determination process. These elements and activities include the formulation of the base fee, determining how the award fee pool is to be used, formulating the evaluation criteria and performance ratings, determining the length of the evaluation period, and finally, development of an appropriate formula to compute the fee. The second step involves contract administration functions in terms of evaluating performance and fee determination procedures. This step includes an examination of the PEB composition and proceedings as well as the role and authority of the FDO. This process can be improved through the implementation of the recommendations of this study which include:

a) Use of a base fee of zero as a general rule;

b) Easing of the current restrictions on the use of roll over provisions;

c) Performance ratings should use only numerical descriptors;

d) Use of more detailed evaluation criteria;

e) Include "logistics supportability" as an evaluation element;

f) Promulgating guidance "highly recommending" on-site representation on the PEB;

g) That the FDO be required to document in writing any modifications to the recommended award fee;

h) That a training program for CPAF contracts be developed; and

i) That guidance be promulgated which identifies grade structures for "average" performance.

2. What are the basic concepts and assumptions in the award fee determination process?

The basic concept is that the award fee determination process is a unilateral subjective evaluation, conducted by the Government following contractor performance, which is not subject to dispute by the contractor. The basic assumption is that the evaluation is fair and equitable, both to the contractor and to the Government.

3. What are the key criteria used to evaluate contractor performance and how have these criteria been utilized?

Three criteria have been most often used. These are technical/management performance, schedule performance, and cost control. Some contracts have broken out "management performance" as a separate element. In addition, "design-to-cost" has been used at times. A fourth element, logistics supportability, is recommended for consideration as one of the key evaluation criteria as this area grows in importance. The problem with use of all criteria generally has been that they are vague and not well-defined. More detailed information in the criteria can reduce some of the subjectivity in the process and add an element of objectivity, which is needed to reduce criticism.

4. What are the significant issues and problems in contractor performance evaluation?

In addition to vague and not well-defined evaluation criteria, formal training for those directly responsible for providing input to the PEB and FDO does not exist. The potential exists for the FDO to abuse his authority and either increase or decrease the recommendations of the PEB without apparent justification. Lack of on-site representation on the PEB is also another potential problem. Another issue involves determination of the length of the performance evaluation period.

5. What guidelines are used by the FDO in determining the quality of contractor's performance and amount of award fee?

Formal guidelines provided by the Naval Material Command leave maximum flexibility and use of professional judgement to the FDO [Ref. 95].

> The FDO shall, based on the recommendation of the PEB and any other pertinent information known, determine the award fee for the period in question.

6. What input does the contractor have in the award fee determination process?

Very little. The evaluation criteria is subject to negotiation prior to formalization of the contract. Once the process is in place, most PEBs allow the contractor the opportunity to make a presentation, if desired, to the PEB which is followed by questions presented to the contractor resulting from board members review of Government and contractor input.

7. What modifications should be made to improve the fee determination process?

The award fee determination process can be improved through implementation of the recommendations of this study and particularly by:

a) Use of a base fee of zero as a general rule;

b) Easing of the restrictions on the use of roll over provisions;

c) Use of only numerical descriptors for performance ratings;

d) Use of more detailed evaluation criteria;

e) Including "logistic supportability" as an evaluation element;

f) Promulgating guidance "highly recommending" on-site representation on the PEB;

g) That the FDO be required to document in writing any modifications to the recommended award fee;

h) That a training program for CPAF contracts be developed; and

i) That guidance be promulgated which identifies grade structures for "average" performance.

8. How are funds utilized which remain in the award fee pool after the award fee determination decision is made?

Two schools of thought exist, and both are currently in use. The first is that once the contractor is awarded funds from the pool, any funds which remain in the pool should be lost as far as the contractor is concerned. These funds would then be recouped by the Government and used for other purposes. The second school of thought is that a percentage of the funds which remain in the pool be rolled forward into subsequent evaluation periods, thus giving the contractor a "second bite at the apple".

9. The amount of the award fee is limited by the size of the award fee pool. Measuring the award fee as a percentage of the award fee pool, what trends, if any, are evident?

Generalized statements about individual contracts are not possible. As a contractor progresses through contract performance and gains experience, a positive correlation between evaluation period and award fee earned should result. This should occur because the contractor "learns" how to respond to the Government's feedback, makes the appropriate adjustments, and shows improved performance during subsequent evaluations with a payoff of higher award fees earned. This indeed occurred in several situations. However, negative correlations also were evident. When examined in a combined data set, a definite skewing of award fees to the high side (i.e., 80 percent and above) occurred. The average award fee was nearly 84 percent and the median award fee was nearly 88 percent for the combined data set. Award fees this high, when the contract has a three percent base fee and a twelve percent award fee provision, results in a total fee earned of between twelve and fourteen percent, making it difficult to migrate to a fixed price type of contract with a target profit objective of ten or eleven percent.

D. RECOMMENDATIONS FOR FURTHER STUDY

1. That a cost-benefit analysis be conducted to measure the benefits and costs of administering CPAF contracts. If the cost of administering a CPAF contract is in excess of any benefits which may accrue to the Government, a contract form other than CPAF should be utilized. The problem then becomes one of how to measure the benefits and costs of administration.
2. Examine the development of a training program and manual for CPAF contracts for both contract formulation and administration.

3. Development of a model to be used in identifying the appropriate weightings to be applied to the evaluation criteria during specific phases of the project. How much weight, for example, should be applied to cost control and in what phases of the contract?

APPENDIX A

INTERVIEW QUESTIONNAIRE

A. GENERAL

1. What is the purpose, as you perceive it, of a cost plus award fee type contract?
2. Do you think that costs are adequately considered in the evaluation of the award fee?
3. Consider the proposal that it be mandatory for cost controls to be at least 50% of the award fee evaluation criteria. What is your reaction to such a proposal?
4. What do you think could most contribute to cost overruns on a CPAF contract and what should be done about it?
5. What level should the base fee be set at? (i.e., 0%, 2%, 5%, etc.) What criteria should be used in making this determination?
6. What criteria is used to determine the amount of the award fee for the evaluation period?
7. How long should the award fee evaluation period be? What criteria should be used in making this determination?

8. What do you see as the key characteristics of the award fee determination process?

9. What do you see as the basic concepts and assumptions in the award fee determination process? (Descriptive response)

10. What do you see as the major factors/characteristics inherent in the process and how do they contribute to the award fee? (Evaluative response)

11. What do you see as the key criteria to be used to evaluate contractor performance and how have these criteria been utilized?

12. What are the significant issues and problems in contractor performance evaluation?

13. What input does the contractor have in the award fee determination process? What input should the contractor have?

14. Why do award fee provisions generate controversy in the contract environment?

15. How do you view the award fee determination process and what are your likes and dislikes?

16. What criteria are available to evaluate contractor performance?

17. How are funds which remain in the award fee pool, after the award fee determination decision is made, utilized? How should they be utilized?

18. If you could do two or three things to modify and improve the award fee determination process, what would they be?

B. FEE DETERMINATION OFFICIAL

1. What positions and grades comprise the Performance Evaluation Board (PEB)? Do any members of the PEB represent the on-site office? If not, why not?
2. What is your opinion of the quality of the input from the PEB? How could the input be improved?
3. How often do you disagree with the PEB input and recommendations?
4. Consider the proposal making it mandatory that the PEB be composed of some representation from the on-site office. What is your opinion of that proposal? What kind of representation should this be? What positions/backgrounds should the representatives have? (QA, auditing, finance, production, engineers, etc.).
5. What kind of influence does the contractor's input have on the fee determination?

C. POLICY

1. What guidelines have been published to assist the PEB/FDO in the award fee evaluation process?

APPENDIX B

PERFORMANCE EVALUATION REPORT CRITERIA

PERFORMANCE EVALUATION REPORT CRITERIA

		Submarginal 0-60	Marginal 61-70	Good 71-80	Very Good 81-90	Excellent 91-100
A Time of Delivery	(A-1) Adherence to plan schedule.	Consistently late on 20% of plans.	Late on 10% plans w/o prior agreement.	Occasional plan late w/o justification	Meets plan schedule.	Delivers all plans on schedule & meets prod. change requirements on schedule.
	(A-2) Action on Anticipated delays.	Does not expose changes or resolve them as soon as recognized.	Exposes changes but is dilatory in resolution on plans.	Anticipates changes, advise Shipyard but misses completion of design plans 10%.	Keeps Yard posted on delays, resolves independently on plans.	Anticipates in good time, advises Shipyard, resolves independently and meets production schedule.
	(A-3) Plan Maintenance	Does not complete interrelated systems studies concurrently.	System studies completed but constr. plan changes delayed.	Major work plans coordinated in time to meet production schedules.	Design changes from studies and interrelated plans issued in time to meet product schedules.	Design changes, studies resolved and test data issued ahead of production requirements.
B Quality of Work	(B-1) Work Appearance	25% dwgs. not compatible with Shipyard repro. processes and use.	20% not compatible with Shipyard repro. processes and use.	10% not compatible with Shipyard repro. processes and use.	5% dwgs. prepared by Des. agent not compatible with Shipyard repro. processes and use.	0% dwgs. presented incl. Des. agent, vendors, subcontr. not compatible with Shipyard repro. processes and use.
	(B-2) Thoroughness and Accuracy of Work.	Is brief on plans tending to leave questionable situations for Shipyard to resolve.	Has followed guidance, type and standard dwgs.	Has followed guidance, type & standard dwgs. questioning and resolving doubtful areas.	Work complete with notes and thorough explanations for anticipated questionable areas.	Work of highest caliber incorporating all pertinent data required including related activities.
	(B-3) Engineering Competence	Tendency to follow past practice with no variation to meet reqmts. job in hand.	Adequate engrg. to use & adapt existing designs to suit job on hand for routine work.	Engineered to satisfy specs., guidance plans and material provided.	Displays excellent knowledge of constr. reqmts. considering systems aspect, cost, shop capabilities and procurement problems.	Exceptional knowledge of Naval shipwork & adaptability to work process incorporating knowledge of future planning in Design.

PERFORMANCE EVALUATION REPORT CRITERIA (Cont'd.)

		Submarginal 0-40	Marginal 41-70	Good 71-80	Very Good 81-90	Excellent 91-100
B Quality of Work (Cont'd.)	(B-4) Liaison Effectiveness	Indifferent to requirements of associated activities, related systems, and Shipyard advice.	Satisfactory but dependent on Shipyard to force resolution of problems without constructive recommendations to subcontr. or vendors.	Maintains normal contact with associated activities depending on Shipyard for problems requiring military resolution.	Maintains independent contact with all associated activities, keeping them informed to produce compatible design with little assist. for Yard.	Maintains expert contact, keeping Yard informed, obtaining info from equip., supplies w/o prompting by Shipyard.
	(B-5) Independence and Initiative	Constant surveillance req'd. to keep job from slipping—assign to low priority to satisfy needs.	Requires occasional prodding to stay on schedule & expects Shipyard resolution of most problems.	Normal interest and desire to provide workable plans with average assistance & direction by Shipyard.	Complete & accurate job, free of incompatibilities with little or no direction by Shipyard.	Develops complete and accurate plans, seeks out problem areas and resolves with assoc. act. ahead of schedule.
C Effectiveness in Controlling and/or Reducing Costs	(C-1) Utilization of Personnel	Planning of work left to designers on drafting boards.	Supervision sets & reviews goals for designers.	System planning by supervisory, personnel, studies checked by engineers.	Design parameters established by system engineers & held in design plans.	Mods. to design plans limited to less than 5% as result lack engrg. system correlation.
	(C-2) Control Direct Charges (Except Labor)	Expenditures not controlled for services.	Expenditures reviewed occasionally by supervision.	Direct charges set & accounted for on each work package.	Provides services as part of normal design function w/o extra charges.	No cost overruns on original estimates absorbs service demands by Shipyard.
	(C-3) Performance to Cost Estimate	Does not meet cost estimate for original work or changes 30% time.	Does not meet cost estimate for original work or changes 20% time.	Exceeds original est. on change orders 10% time and meets original design costs.	Exceeds original est. on change orders 5% time.	Never exceeds estimates of original package or change orders.

CONTRACTOR PERFORMANCE EVALUATION REPORT

(j) *Example of Contractor Performance Evaluation Report.*

CONTRACTOR PERFORMANCE EVALUATION REPORT

Ratings	
Excellent	(91-100)
Very good	(81- 90)
Good	(71- 80)
Marginal	(61- 70)
Submarginal	(0- 60)

Period of ______________ 19____
Contract Number ______________
Contractor ______________
Date of Report ______________
PNS Technical Monitor/s ______________
____

CATEGORY	CRITERIA	RATING	ITEM FACTOR	EVALUATION RATING	CATEGORY FACTOR	EFFICIENCY RATING
A	TIME OF DELIVERY					
	A 1 Adherence to Plan Schedule	______	x .40	= ______		
	A 2 Action on Anticipated Delays	______	x .30	= ______		
	A 3 Plan Maintenance	______	x .30	= ______		
		Total Item Weighed Rating		______	x .30 =	______
B	QUALITY OF WORK					
	B 1 Work Appearance	______	x .15	= ______		
	B 2 Thoroughness and Accuracy of Work	______	x .30	= ______		
	B 3 Engineering Competence	______	x .20	= ______		
	B 4 Liaison Effectiveness	______	x .15	= ______		
	B 5 Independence and Initiative	______	x .20	= ______		
		Total Item Weighed Rating		______	x .40 =	______
C	EFFECTIVENESS IN CONTROLLING AND/OR REDUCING COSTS					
	C-1 Utilization of Personnel	______	x .30	= ______		
	C-2 Control of all Direct Charges other than labor	______	x .30	= ______		
	C-3 *Performance to Cost* Estimate	______	x .40	= ______		
		Total Item Weighed Rating		______	x .30 =	______

TOTAL WEIGHED RATING ______________
Rated by: ______________
Signature(s) ______________

NOTE: Provide supporting data and/or justification for below average or outstanding item ratings.

APPENDIX D

EVALUATION CRITERIA

The following evaluation criteria considerations were adapted, in part, from Naval Sea Systems Command Draft Instruction 4700, "Surface Ship Availability Contracts," but may be modified and utilized, where appropriate, with nearly any type of CPAF contract for major weapons systems acquisition.

a. Technical/Management Performance

Major considerations in the technical and management performance elements are:

1. The effectiveness of the management organization in problem anticipation and avoidance, as well as implementation of timely corrective action in problem areas which could impact successful completion of the contract should be evaluated. Consideration should be given to the prevention of schedule slippage or cost escalation through the use of budgeting techniques, material selection, subcontractor utilization, and manpower loading.

2. The responsiveness of the purchasing organization in obtaining and providing the parts, material and equipment necessary to maintain schedules should be evaluated. Factors such as the number of jobs held up because of lack of material, cost savings obtained through the use of economic purchasing techniques, and the avoidance of expenditures on such things as premium transportation costs should be considered. The selection of cost effective materials, when several approved options exist, should also be considered.

3. The responsiveness of the engineering organization in issuing drawings, sketches, work item specifications, technical instructions, and similar documents required by the contract administrators should be evaluated. Use of simple solutions and economic work methods for job accomplishment should be considered. The number of jobs held up for lack of engineering information and rapidity with which engineering problems are resolved should also be considered. The degree of rework caused by inadequate contractor technical documentations and solutions to rework requirements should be considered.

4. Subcontractor Management: The ability of the contractor to select, enhance competition, and

effectively manage subcontractors, both material/ service vendors and on site subcontractors, should be evaluated. The schedule/cost impact of jobs held up for vendor provided material, technical data and/or delays caused by on site subcontractors should be considered. Efforts made to keep subcontractor costs to a minimum should also be considered.

5. Cofiguration Control: Effectiveness in obtaining materials and performing repairs and alterations in conformance with approved drawings and technical data should be evaluated. Timely submission of configuration control data to the Government should also be of consideration.

6. Data Management: The effectiveness of contractor utilization of Government Furnished Information (GFI) should be evaluated. The contractor should be evaluated on his effectiveness in detecting consequential technical errors in GFI prior to production, and on the effectiveness in working with the Government to resolve such problems before they have an adverse cost impact. The contractor should be judged on his ability to apply GFI to engineering of work, and use of GFI in installation, test, and checkout of completed work.

7. Quality Assurance: The effectiveness of the quality assurance organization in fulfilling the in-process, as well as the at-completion, quality requirements of the contract should be assessed. Effectiveness in identifying and correcting quality deficiencies and their causes in a timely manner should be considered. The contractor's management approach to fulfilling the quality requirements of the contract, cleanliness of interface work areas, and as-found testing requirements should also be considered.

8. Effectiveness of the contractor's ability to control costs and to avoid unnecessary cost increases should be evaluated. Particular emphasis should be placed on the contractor's ability to maintain the initial budget and to make cost effective decisions with respect to technical requirements, schedule, and quality control.

9. Change Orders: The timely submission of condition reports by the contractor, cooperation in negotiation of changes, and willingness to provide information needed by the Government for timely negotiations should be considered.

10. Liaison with the Project Manager and other Government representatives should be evaluated. This includes stability of the contractor project

organization, established management procedures, and contractor attitudes.

11. The use of Facilities Capital Cost of Money for productivity enhancing capital investments should be considered.

12. Contractor personnel management procedures should be evaluated, including the minimization of turnover, training programs, and apprentice programs.

13. Integrated logistics support efforts should be evaluated, including provisions of technical documentation, repair parts ordering, technical manuals, and training.

b. Schedule Performance

Major considerations in structuring evaluation criteria for schedule performance include:

1. Effectiveness in establishing and maintaining a timely and efficient scheduling system should be evaluated. Particular emphasis should be placed on establishment and timely updating of a scheduling system that properly integrates contractor furnished material, Government furnished material and production labor, including subcontractor efforts, into a rational and cost effective plan for completion of the contract.

2. Effectiveness in meeting preplanned milestones should be evaluated. Particular consideration should be given to the contractor's ability to maintain adequate progress in anticipation of completion of milestones.

3. Effectiveness in measuring schedule progress using preplanned milestones and critical paths should be evaluated. Communication with appropriate Government representatives regarding appraisal of performance related to critical paths should be highlighted.

4. Effectiveness in the recovery from and the correction of causes leading to missed events should be considered.

5. Effectiveness in integrating Government work items into contractor schedules should be evaluated. Particular emphasis should be placed on the coordination with appropriate Government representatives of milestones with joint responsibility.

6. Effectiveness of manpower utilization to meet planning and production schedules should be evaluated. This should include items such as methods and procedures to reduce the amounts of premium time used to minimize time lost on the job and between jobs, and to perform work with a reasonable number of qualified personnel. The contractor's effectiveness in

controlling fluctuations of manpower requirements, so as to enhance stabilization of overhead rates, should also be considered.

c. Cost Performance

Major considerations in structuring evaluation criteria for cost performance include:

1. Effectiveness in meeting the cost performance plan submitted in the cost performance report should be evaluated. Results of cost avoidance practices should also be considered.
2. Consideration should be given to the timely and accurate submission of the cost performance report and cost status of funds report.
3. Effectiveness in identifying early cost and schedule problems, including timely variance analysis, as well as effectiveness in dealing with identified problems, should be evaluated.

APPENDIX E

PRESENTATION OF AWARD FEE DATA

Data from eighteen CPAF contracts representing four different Project Offices were obtained for review and analysis. The approximate total cost estimate for these eighteen contracts exceeded $2.271 billion. These data were provided to the researcher by evaluation period, and included the amount of funds available in the award fee pool to be awarded during the evaluation period and the amount actually awarded. From these data the researcher calculated the percentage of award fee earned. These data are presented in the following tables. As a condition of making the data available, the researcher agreed to sanitize the data so that it would not be possible to identify any particular data set to the associated contract or Project Office. For this reason, the data tables have been labeled with generic titles.

TABLE 7

Contract Number 1 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	130,335	112,088	.859
2	86,890	81,677	.940
3	88,173	83,764	.949
4	87,909	82,634	.939
5	88,259	83,846	.949
6	261,640	248,558	.950

TABLE 8

Contract Number 2 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	766,644	613,315	.80
2	808,245	678,926	.84
3	1,040,021	884,018	.85
4	1,183,159	1,017,517	.86
5	1,729,845	1,383,876	.80
6	2,192,713	1,798,025	.82
7	2,728,907	2,046,681	.75
8	3,445,840	2,963,423	.86
9	2,658,280	2,286,121	.85
10	2,244,326	1,840,347	.82
11	2,171,098	1,780,300	.82
12	2,242,872	1,973,728	.88
13	3,443,047	2,961,020	.86
14	1,902,860	1,427,145	.75
15	2,190,540	1,971,486	.90
16	1,647,348	1,482,613	.90
17	1,969,844	1,871,352	.95
18	1,579,241	1,500,279	.95
19	896,459	851,636	.95
20	864,613	864,613	1.00
21	232,208	225,242	.97
22	539,401	528,612	.98

TABLE 9

Contract Number 3 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	1,489,600	1,385,328	.93
2	1,550,400	1,426,368	.92
3	1,088,320	1,001,254	.92
4	1,500,955	1,350,859	.90
5	1,575,201	1,433,433	.91
6	1,845,451	1,679,460	.91
7	2,057,383	1,872,219	.91
8	2,310,171	2,125,357	.92
9	2,442,299	2,295,761	.94
10	2,306,236	2,121,737	.92
11	2,002,590	1,782,305	.89
12	1,683,578	1,481,548	.88
13	1,725,049	1,483,542	.86
14	1,651,687	1,387,4[illegible]7	.84
15	2,050,300	1,947,785	.95

TABLE 10

Contract Number 4 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	1,828,374	1,736,955	.95
2	1,495,457	1,420,684	.95
3	1,546,386	1,484,531	.96
4	1,469,993	1,425,893	.97
5	1,953,817	1,914,741	.98
6	2,497,812	2,422,878	.97
7	2,613,734	2,561,459	.98

TABLE 11

Contract Number 5 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	1,834,960	1,688,163	.92
2	1,834,960	1,669,814	.91
3	1,870,717	1,683,645	.90
4	2,974,795	1,805,072	.87
5	2,343,169	2,108,852	.90
6	2,871,876	2,613,407	.91
7	2,238,862	2,014,975	.90
8	2,547,463	2,292,716	.90
9	2,476,273	2,357,648	.87
10	2,590,823	2,357,648	.91

TABLE 12

Contract Number 6 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	1,834,960	1,688,163	.92
2	1,834,960	1,669,814	.91
3	1,870,717	1,683,645	.90
4	2,974,795	1,805,072	.87
5	2,343,169	2,108,852	.90
6	2,871,876	2,613,407	.91
7	2,238,862	2,014,975	.90
8	2,547,463	2,292,716	.90
9	2,476,273	2,357,648	.87
10	2,590,823	2,357,648	.91

TABLE 13

Contract Number 7 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	1,240,627	589,844	.475
2	1,426,753	910,342	.638
3	1,749,991	1,161,001	.663
4	3,037,297	2,027,886	.667
5	2,573,994	1,647,416	.640
6	2,761,805	1,838,554	.665
7	3,672,910	2,674,916	.728
8	3,006,110	2,005,911	.667
9	4,693,145	3,887,576	.828
10	5,342,630	3,153,124	.890
11	2,672,641	2,184,013	.817
12	1,955,420	1,480,196	.757
13	606,591	298,077	.491

TABLE 14

Contract Number 8 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	2,737,110	1,721,095	.629
2	3,744,407	2,913,617	.778
3	3,360,408	2,793,339	.831
4	4,149,431	3,786,356	.913
5	2,986,236	2,812,661	.941

TABLE 15

Contract Number 9 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	279,191	121,253	.434
2	600,614	260,847	.434
3	1,095,021	321,936	.294

TABLE 16

Contract Number 10 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	299,038	479,330	.636
2	1,112,506	794,647	.714
3	1,484,706	1,153,670	.777

TABLE 17

Contract Number 11 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	385,202	269,671	.700
2	733,961	597,664	.762
3	660,546	556,774	.843

TABLE 18

Contract Number 12 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	795,852	710,616	.893
2	546,669	516,985	.946
3	575,170	557,915	.970

TABLE 19

Contract Number 13 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	529,278	461,213	.871
2	572,643	423,756	.740
3	764,297	615,030	.805

TABLE 20

Contract Number 14 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	875,436	737,905	.843
2	555,357	435,568	.784
3	874,848	762,342	.871

TABLE 21

Contract Number 15 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	492,355	421,997	.857
2	537,297	412,966	.769
3	964,537	738,546	.766

TABLE 22

Contract Number 16 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	748,427	656,370	.877
2	1,074,847	968,437	.900
3	1,486,457	1,458,851	.981

TABLE 23

Contract Number 17 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	708,388	564,585	.797
2	997,977	817,685	.820
3	1,311,929	1,139,864	.869

TABLE 24

Contract Number 18 Award Fee Data

PERIOD	AWARD FEE POOL	AWARD FEE EARNED	PERCENTAGE EARNED
1	306,351	258,254	.843
2	342,904	301,756	.830
3	1,216,539	712,527	.586
4	1,476,808	1,002,753	.680

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